Traditional Heritage Management: The Case of Australia and Tanzania

Johari Hussein* and **Lynne Armitage****

Abstract

Much has been written within and outside the heritage sector about traditional knowledge and practice. It is often characterised as an established movement that has contributed significantly to the local, national and international practice in conservation. Yet, the emergence of conservation practice has caused tremendous changes and a neglect of traditional knowledge that was critical for the survival of the Indigenous cultural heritage that exists today. The objective of this paper is to explore diverse approaches to traditional knowledge and practice that Indigenous peoples have employed to achieve management of their cultural landscape in Australia and Tanzania. The paper also explores major issues facing Indigenous people and the enormous challenges of adapting to modern conservation approaches. The paper illustrates how public and private institutions can learn from a wide array of traditional knowledge and practice directed towards heritage management and conservation. This paper makes an original contribution by considering two Indigenous cultures which have not previously been compared from this perspective.

Key words: Indigenous people, traditional knowledge, heritage management, modern conservation, Australia, Tanzania.

*PhD Candidate, Faculty of Society and Design, Bond University, 14 University Dr, Robina, Queensland 4226, Australia, email: jamar@bond.edu.au (corresponding author).

**Associate Professor, Faculty of Society and Design, Bond University, 14 University Dr, Robina, Queensland 4226, Australia, email: larmitag@bond.edu.au.

1. Introduction

The historical background of heritage management dates back to before the pre-colonial era in both Tanzania and Australia, when these two countries were inhabited by Indigenous groups. Such groups had different social systems in terms of lifestyle and cultural traditions, which differed according to the landscape they occupied (Berkes, 1993). Their complex social systems reflected an intimate knowledge of the land and environment. Over many centuries, the knowledge of how to manage and conserve their local resources was passed down from one generation to the next (Hart, 2010). Although, several stakeholders are aware of the existence of traditional management, its contribution has often been overlooked by the present-day heritage management systems and conservation practices (de Jesus Jopela, 2011). The primary focus of this paper is to present traditional knowledge from the existing body of research undertaken in the fields of heritage in the built environment, as well as Indigenous education and practice. The literature review begins by giving a general overview of Indigenous groups found in Australia and Tanzania and their traditional knowledge. By analysing examples, this review explores similarities and differences in the traditional knowledge of both Indigenous groups in order to determine how it influenced and shaped cultural landscape in their respective built environment, rather than simply looking at the historical trends in heritage management at different streams of time. The last section highlights the importance of recognising the contribution of traditional heritage to modern day practices in the areas conservation, management and sustainable development.

2. Literature Review

This section provides an overview of the history of Indigenous people in Australia and Tanzania. It aims to develop a theoretical framework for viewing traditional knowledge: it does this, chronologically with examples and by recognising key aspects of traditional knowledge and their significant in planning the built environment, as well as in the management and conservation of cultural landscape.

2.1 Indigenous People in Australia and Tanzania

In this paper, the term *Indigenous* refers to people originating in a specific place, reflecting different experiences shared by a group of people who have inhabited a country for thousands of years. The United Nations (UN, 2009) estimated there are approximately 370 million Indigenous people worldwide; this figure comprises of about 5,000 distinct cultures mostly found in remote regions of the world. Scientific evidence indicates that Indigenous people around the world originated from *hominids* who evolved in Africa about four million years ago (Broome, 2002).The hominids spread across the earth about 150,000 to 40,000 years ago, driven by climate and the need for more resources, into Europe, Asia, the Middle East, America and as far as Australia (Manning, 2012). It is during this period that the *Homo sapiens,* who are the modern human, emerged. Thus, this process created unique Indigenous groups ranging from the forest peoples of the Amazon to the tribal peoples of India, from the Arctic Inuit people to the Aborigines in Australia (Broome, 2002).

Near the Olduvai Gorge in northern Tanzania, archaeologists uncovered the remains of the hominids' earliest known ancestors, dating back 3.6 million years (Ndembwike, 2009). After 1.8 million years, hominids that developed into *Homo habilis* and around 150,000 years later, they evolved again into the nomadic hunter-gatherer known as *Homo sapiens* who travelled throughout Africa and migrated to other parts of the world (Bramble and Lieberman, 2004). Later, San, Cushitic, Bantu and Nilotic Indigenous groups inhabited Tanzania between 5000 BC and 500 CE, establishing themselves as the first people of the country (Ndembwike, 2009). Their immediate descendants were: the Hadzabe of northern Tanzania; Ndoboro also

known as Akie, living in the central highlands; and, the Maasai such as Barabaig and Iraqw. Today, Tanzania is estimated to have more than 150 Indigenous ethnicities and about 400,000 racial minorities of predominantly Asians and Arabs descent (Lawrence, 2009).

The Homo sapiens eventually reached Australia, trekking from the first wave of migration travelling through islands and straits from Europe and Asia about 60,000 to 40,000 years ago (Broome, 2002). Such people became the original inhabitants of this continent and comprised Aboriginal and Torres Strait Islander Indigenous groups. The Aboriginal oral tradition claims the Indigenous people have lived in this continent since the Dreaming or the era of creation; however, this contradicts the illustrations on the rock-art site that shows ancestral figures arriving in canoes from overseas (Jupp, 2001). The Australian Bureau of Statistics (ABS, 2011) reports that there were 548,370 Indigenous people living in Australian in 2011. Of these people, 90% and 6% were of Aboriginal and Torres Strait Islander descents respectively and the remaining 4% were of both Aboriginal and Torres Strait Islander origin.

Indigenous Australians and Tanzanians have a unifying characteristic of being nomadic with a strong a spiritual connection to their environment. Reflecting such traits, Indigenous people around the world developed unique cultural values and specific knowledge concerning the use of environmental resources to sustain their existence through time (Appleton, 2014). Although they comprise about 4 to 5% of the total world population, Indigenous people reside on 22% of the land surface and, in doing so, maintain 80% of the planet's biodiversity (Abate and Kronk, 2013). Indigenous groups take pride in their traditional knowledge as it is integral for them to maintain, protect, conserve and develop their cultural landscapes (Berkes *et al*, 2000). As defined by the Operational Guidelines for the Implementation of the World Heritage Convention (UNESCO, 1998), cultural landscapes:

> are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal.

In this context, such places are culturally significant places in that they tell the history from human evolution to modern societies and how communities created their cultural identities within their surrounding environments. The Burra Charter (Australia ICOMOS, 1999) describes cultural significance as the 'aesthetic, historic, scientific, social or spiritual value for past, present or future generations' which is 'embodied in the place itself, its setting, use, associations, meanings, records, related places and related objects.'

The following sections explore the role of Indigenous groups in constructing their traditional lifestyle and, as result, forming cultural landscape. The term 'Indigenous people/groups' includes the Aboriginal and Torres Strait Islander groups, as well as all the aforementioned Tanzanian Indigenous ethnicities. On this note, the following section discusses traditional knowledge using specific examples found in Australia and Tanzania.

2.2 Aspects of Traditional Knowledge

For centuries, this knowledge system has been used by Indigenous people to understand and adapt to their ecosystems and create their cultural landscapes. However, academics, scientists and practitioners have only recently recognised this knowledge as a significant component in maintaining balance between people, ecosystems and the environment (Berkes, 1993). The balance is maintained from knowledge embodying traditional experience of nature gained over millennia from direct observations and transmitted over generations (Mazzocchi, 2006). This knowledge has been applied in a variety of fields, including agriculture, pharmacology,

health, horticulture, forestry, ecology and environmental management. Due to the innate complexity of this concept, there is no universally accepted definition of traditional knowledge. However, other accepted terms include traditional ecological knowledge, local knowledge, Indigenous knowledge, folk knowledge and tacit knowledge (Berkes, 1993).

For the purposes of this study, the meaning of *traditional knowledge* is consistent with Berkes's (1993) definition:

> a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment.

It involves collective knowledge about cultural landscapes shared amongst custodians and then passed to next generations through rituals, performance and storytelling. In particular, traditional knowledge might be unique or similar depending on the different cultural values of any Indigenous groups (Abele, 1997). In this context, the following paragraphs summarise key aspects of traditional knowledge that have been addressed by different researchers in this field.

Through traditional knowledge, Indigenous people have maintained their cultural lifestyles and have preserved the authenticity and integrity of their cultural traditions since their emergence many centuries ago (Romero, 2005; Berkes, 1993). Different types of traditional knowledge expressed as a form of cultural identity are observed throughout Tanzania and Australia. Some famous examples include: the Lyabe sacred site believed by the Arrente of the Northern Territory to embody the Ancestral Honey Ant Beings who turned into stone at the Dreaming (Memmott, 2012): and, before becoming a Moran warrior, each young Masai man was required to go through the *Olporror* (coming of age), which involved killing a lion with his bare hands and getting circumcised without pain killers to show bravery and honour (Goldman *et al.,* 2010). These examples showcase how traditional knowledge represents the cultural identity of Indigenous people.

Values and ethics embedded in the cultural practices of Indigenous groups is another aspect of traditional knowledge. Values involve a system that dictates how Indigenous people act between and among social groups, as well as within their surrounding and environment (Frischknecht, 2006). Meanwhile, ethics represent rules that are maintained via the passing on of rules, myths, customary laws and restrictions (Berkes, 1993). Thus, this may cause some traditional knowledge to differ between Indigenous groups. For instance, the Sukuma people of northern Tanzania perform songs and dance mostly during ceremonial rituals for childbirth, death and work (Mirambo, 2004), while Whap (2001) suggests that Torres Strait Islanders of Australia use songs and dance to shape minds, morals and opinions of daily life.

The knowledge is also based on long-term observation and interpretation of various plants and animals and how they react to local conditions around them. Laccarino (2003) further discusses how the dynamic process of traditional knowledge has enabled Indigenous people to conceptualise, describe and adapt to their natural environment. Webb (1997) explains how tadpole hatching was an indication to the Yarralin people in Australia that frogs are calling out to the rainbow, which suggests that the first rain is approaching because the earth is getting hot, trees are getting dry and agricultural harvests are becoming scarce. In Tanzania, Indigenous groups predicted the climatic condition using animals' intestine; the presence of a small intestine indicated no rain and thus elders prepared for drought or famine, while intestines with dung forecasts heavy rainfall (Van, 1999).

Additionally, traditional knowledge provides insight into how the features of the land represent the ancestral spirits and their shaping of the environment (Verschuuren, 2010). According to Broome (2002), this knowledge reveals that Indigenous life began when ancestors broke away from the sun burst to create the earth crust, while others shaped the landscape, creating living beings from bark, and formed rain and wind. For instance, Anangu people believe that Uluru symbolises fertility because the area is inhabited by dozens of all forms of ancestral fathers and mothers (Dudley *et al*., 2009). In Tanzania, Wanyamwezi conserve *miombo* woodlands for cultural and ritual initiations since the former most powerful chiefs' spirits reside there (Mgumia and Oba, 2003). Thus, Carmichael *et al.* (2013) highlight the concept of sacred land being formed from this traditional knowledge, which revolves around religious beliefs that ancestral spirits breathed life into the land by taking different physical forms and, therefore, the environment merits respect.

Other characteristics of traditional knowledge include: locally bound as its context is influenced by local conditions; oral tradition, as it is passed on through narratives; not integrated into scientific and technical knowledge; closed management system, since it is culture specific: and dynamic, as it is influenced by creativity and adaptions (Hart, 2010; Mazzocchi, 2006; Agrawal, 1995). Hart (2010) discusses how these aspects of traditional knowledge establish a connection between traditions to the environment and the understanding of Indigenous worldviews. The following section now discusses how traditional knowledge has been applied in the built environment using examples from Australia and Tanzania.

2.3 Traditional Knowledge in the Built Environment

Today, scientists attest not only to the presence of information about preservation of natural resources held within traditional knowledge, but also recognise traditional values that planned the landscape and shaped the built environment. The values of traditional knowledge have intimately linked people with the land for thousands of years. The importance of understanding traditional knowledge in developing natural environment is vital and is closely tied to social, economic and political systems of any particular society (Hough, 1990). Rapoport (1969) suggests such factors provide a base for decisions that influence people's behaviours in relation to their environment that allow them to physically express their culture and, therefore, communicate their identity, knowledge and values. While Hough, Rapoport and others certainly argue that culture has the most influence, they also give examples of different responses to specific physical conditions, such as landscape, climate and materials, as well as other specific needs of Indigenous groups. It is in light of these factors that the following subsections outline how Indigenous people in Australia and Tanzania, as in other parts of the world, created and designed the landscape of their built environment.

Climatic Conditions

Tanzania has a tropical climate with regional variations owing to its topography. The country experiences temperatures from 23 to 31°C during hot periods and 11 to 15°C in cold periods, sometimes dropping as low as 10°C during heavy rain seasons (Tanzania NBS, 2012). Australia, on the other hand, experiences a very wide variety of climates due to the size of its continent with temperatures ranging from below 0°C in the Snowy Mountains, through the interior arid expanses of 23 to 30°C, to the temperate regions with extreme weather exceeding 40°C (ABS, 2012). Currently, climatic condition is an important factor in planning the built environment, yet its interpretation and opinion is strongly influenced by modern technologies instead of reflecting traditional values, which evolved during prehistory (Wilby, 2007; Eliasson, 2000; Lawrence and Low, 1990). During this time, Indigenous people

planned their cultural landscape in response to the traditional calendar, which was set up based on an intimate knowledge of natural events in and surrounding their environment (Burroughs, 2005).

For example, The Bininj and Mungguy who are the local Aboriginal people in Kakadu National Park recognise six seasons including *Gunumeleng*, a pre-monsoon season of hot weather (Green *et al.,* 2010). At this time, Indigenous people moved from flooded windbreaks known as *wiltja* to rock shelters in the mountains, due to violent storms. This explicit connection between the traditional calendar and Indigenous place making is also revealed by the Hadzabe of Tanzania (O'Connell *et al.,* 1991). During prehistoric times, this group created transitional platforms of domed structures to provide warmth at the beginning of the rainy season before they took shelter beneath stone overhangs. Memmott (2007) and Mabulla (2003) discuss different types of structures, such as windbreaks, shades and transitional platforms, rock shelters and stone overhangs. The traditional knowledge used in the construction of these shelters as a result of different climatic conditions is discussed by Memmott (2007) in more detail.

Available Local Materials
Locally available and naturally occurring resources dictated the choice of traditional forms of Indigenous shelters and structures. Knappett (2007) states that local materials act as symbols for the cultural identity that reflects Indigenous lifestyle. In pre-contact and early colonial times, Indigenous people had a nomadic lifestyle, which meant there was no need to create lasting dwellings (Hurcombe, 2007). In Australia and Tanzania, the use of local materials helped Indigenous people create architectonic spaces that respected cultural values and their indispensable spirituality. Thus, most Indigenous shelters were relatively semi-permanent with either simple or complex designs depending on the locally available material (Knappett, 2007).

Specifically, stone and rocks were used for designing complex structures as Indigenous people believed stones held the powers of the ancestors who created the landscapes. For instance (Memmott and Reser, 2000), rock shelters in Arnhem Land were created due to the abundance of stone materials in the landscape. In addition, the choice of rocks represented spiritual value and intensified the bond between the people and the ancestral beings from the dreaming. In contrast to this, Masao (1978) identifies the stone windbreaks in the Kondoa Masai escarpment as rock shelter of basic design, made simply to provide protection from wind, sun and rain. Masao (1978) further states that the choice of material and the shelter's design were influenced by presence of natural materials at the bottom of the hilly landscape: rugged terrain, consisting predominantly of stone, with small bushes and scattered woodland trees.

As listed by Memmott (2007) and Kamamba and Msobwe (1990), other materials used to develop Indigenous shelters and structures included: thatch, wattle, cow dung, ashes, clay, palm leaves, rammed earth, timber species, groves of small pines, lotus, bamboo, among other naturally endowed materials. Similarly, locally available materials were also used to create other structures and shelters, such as hunting shades, residential shelters, sculptures and coverings for religious objects (Memmott, 2007). These are distinctive examples of materials that have been integrated into Indigenous culture, thus contributing to development of a lifestyle and a sense of place (Dowling, 1997).

Traditional Crafts

Traditional knowledge in the built environment is not limited to climatic factors and the availability of local material in the natural environment; it also encompasses the technology that was used in the making of the Indigenous landscape. One field that was particularly impacted by traditional knowledge regarding technology is craft. Nascimento (2009) defines craft as 'the way in which materials, bits and pieces are assembled to allow human exploitation of their environmental resources and improvement of lifestyle.' According to Davis (2007) and Masao (1979), craft consists of experience and skills in: (i) artistic expression such as painting, carving and engraving; (ii) aesthetic style such as beauty, colour and texture, and; (iii) methods such as tools and technology employed to create distinctive cultural structures. Thus, traditional crafts are particularly evident in Indigenous landscapes found in both Australia and Tanzania.

Artistic expression varies from naturalistic to very abstract symbols, and often includes mythical beings represented on rock shelters and structures (Memmott, 2007; Mabulla, 2005). Paintings and engravings were intended to depict important events, information and warning about the Indigenous culture that created them. For instance, the arrival of settlers was well documented by inscriptions of aeroplanes, people on horseback and handguns throughout the rocks found in the central and northern regions of Australia (Taçon, 1989). In addition, aesthetic style was displayed in terms of well-executed decorations with unique and sophisticated colours. Indigenous people used reddish-brown colours to decorate the exterior of Majilili rock shelters and caves to give a fine texture that reduced disintegration caused by the tropical weather in central Tanzania (Masao, 1979). In the same way, traditional knowledge is visible in the methods used in designing shelters and structures that were flexible and adaptable to the natural environment. For example, the architecture of Masai Inkajijik and Aboriginal Wiltja featured domed, cylindrical and symmetrical layouts designed to shield people from strong wind and heavy rainfall conditions (Memmott, 2007; Mabulla, 2005).

The foregoing section demonstrates that traditional knowledge was developed from historic experiences of ancient cultures living all around the world. The knowledge was intended to preserve the authenticity and integrity of their cultural values and significant landscapes. This section started by highlighting that the application of this knowledge system in the built environment responded to social, economic and environmental factors. Such factors are influenced by climate conditions, availability of local resources and traditional crafts, as well as other particular needs of the Indigenous groups. As a result, traditional knowledge has produced the distinctive designs that appear in Indigenous structures both in Tanzania and Australia. This evolved further during and after colonisation as Indigenous people became sedentary and learnt new ways of adapting to their natural environment (Burroughs, 2005).

2.4 Traditional Knowledge and Heritage Management Systems

It is obvious from the previous section that Indigenous people are tied to their ancestral obligations to protect their land, which is considered sacred. For the purpose of this paper, sacred land is not confined only to natural sites such as forests, water bodies, mountains, soil, biodiversity and groves (Wild *et al.,* 2008), but also built structures including monuments, shrines and buildings that communicate traditional, cultural and spiritual values (Carmichael *et al.,* 2013). This meaning is deliberately used as it considers sacred sites as part of historic environments associated with the cultural and religious development of Indigenous people over space and time (UNESCO, 2008). In other words, sacred sites reveal the diversity of

Indigenous cultural values such as traditions, beliefs and lifestyles that reflects their believed origins of their environment (Verschuuren, 2010).

However, there is a common misconception that preservation of cultural landscape in Indigenous societies began with colonisation. As de Jesus Jopela (2011) notes, colonisers found many of these cultural landscapes intact; the survival of such places indicates that Indigenous people had a form of management system. In this sense, Indigenous people managed their cultural landscape through heritage knowledge of custodianship, which today is known as a traditional management system (Verschuuren, 2010). Livingstone (2000) emphasises that the nature of heritage knowledge is in contestant flux since it informs on specific social perspective at given point in time.

This interpretation revolves around Hewison's (1987) idea that historic environment is an integral part of the long-running 'culture and society' shaped in accordance with the survival of traditions over time. Nevertheless, Ashworth and Tunbridge (1990) created a model that examines important factors for management of heritage in response to the socioeconomic pressures and needs of the cultural landscape. Research in this area implies that changes in or distortions of traditional knowledge are likely to affect management and conservation practices in the built environment. For this reason, heritage knowledge is not static; it changes as different lifestyle and generations build upon the management systems. The following paragraphs establish different types of knowledge that have been widely adopted as part of heritage management systems at different points in time.

During pre-historic times, Indigenous groups preserved the cultural landscapes that connected them with ancestral spirits and deities through traditional management (Stovel et al., 2005). Traditional management, as defined by Taylor (2005), refers to 'cumulative bodies of knowledge and practices regarding the relationship between living beings and their environment.' This system constitutes cultural laws such as customs, beliefs and practices, which were set by traditional custodians to preserve the integrity and authenticity of heritage resources (Ross, 2008). The underlying theme of this system, according to Berkes et al., (2000), is promoting the sustainable use of cultural landscapes by enforcing social mechanisms, such as restrictions and rules that people must abide by prior to being permitted to visit such areas. Cleere (2001) describes how the early history of traditional heritage management is represented by the rock-art sites in different parts of the world. Traditional heritage management is still used in rock-art sites today, as people who believe in supernatural ancestors continue to visit such places for different purposes (de Jesus Jopela, 2011).

In the early years of colonisation, European settlers broke down the system of traditional custodianship over common resources (Kideghesho, 2006; Dodds, 1998). The intention was to weaken the spiritual affiliations Indigenous people had with their environment (Brock, 2005). New institutions such as western religions and formal education were introduced while prohibitive laws and entry restrictions were placed on sacred landscapes. For instance, the Waserabati ethnic group was restricted from performing their annual pilgrimage at Kemarishi Hill located inside the Serengeti National Park (Kideghesho, 2006). In the same way, Reynolds (1987) discusses how European settlers enacted land rights to reinforce sovereignty power and to exclude Aboriginal people from owning their cultural landscape. Similarly, Bovensiepen (2009) documents that missionaries condemned traditional beliefs of spirituality, including ceremonies, rituals and taboos, in Australia. Bwasiri (2011) and Brock (2005) discuss how the traditional management of sacred landscapes ceased in many parts of Indigenous areas including those Tanzania and Australia as a consequence of colonisation.

Colonialism came with a formal system known as western-style management for protecting landscape that displayed evidence of Indigenous people's developments (Carmichael *et al.,* 2013; Bwasiri 2011). Generally, this management system was designed to protect the scientific values of cultural relics, such as rock art, artefacts and skeleton materials through heritage legislation and frameworks (Carmichael *et al.,* 2013; Ndoro and Pwiti, 2005). The system argued that traditional management was inefficient since it contributes to the destruction of the integrity and authenticity of heritage resources. For example, heritage managers were opposed to the traditional practice of touching and splashing beer on *Mongomi wa Kolo* rock-art sites in central Tanzania (Bwasiri, 2009). Similarly, Australian Aboriginals were stopped from performing traditional rituals like *lulik* and *asauk,* which involved offerring palm wines and blood collected from killing their children to ancestral spirits (Bovensiepen, 2009).

In post-colonial times, a shift towards new strategies for heritage management at national, regional and global level was observed by different scholars (Orbasli, 2002). It evolved in response to shortfalls in the western-style system, as its guidelines and policies were Eurocentric and did not recognise any non-western cultural significance of heritage landscapes (Hoppers, 2002). The situation stirred philosophers like Franz Wickhoff, Alois Riegl, William Morris and John Ruskin to argue for people to rethink new ways of preserving cultural resources, with an emphasis on built landscapes (Schorske, 1981). In the 1970's, scientific research argued for sufficient investigations into standards and ethics based approaches that could be applied to cultural heritage management (Wirilander, 2012). In turn, a fundamental shift to modern conservation theories from western-style management took place despite the growing doctrines and charters.

The Burra Charter (Australia ICOMOS, 1999) defines conservation:
> all the processes of looking after a place so as to retain its cultural significance, caring not only for the cultural heritage values of the site but also the surrounding environment.

The charter underwent significant changes and reviews were made in 1982 and 1988 (and endorsed in 1999) in order to address the pitfalls regarding the concept of cultural significance and its associated social and traditional values (Walker and Marquis-Kyle, 2004). In recent years, heritage values have become a central concern in the conservation of cultural heritage as it is considered a process in a sense that it varies due to cultural diversity affecting attitudes towards the past and its material remains (Ahmad, 2006). Thus, the Nara Document of Authenticity (Australia ICOMOS, 1994) was introduced to expand the scope of heritage in relation to traditional form, materials, crafts and settings presented in previous charters (Aygen, 2013).

There have been numerous successes of traditional management that sustained respect for culturally significant places throughout Indigenous groups (Maradze 2003). Meanwhile, scholars and heritage practitioners have recognised that formal management systems alone are incapable of ensuring the effective and sustainable management of cultural landscapes (Mumma, 2005). This raises a concern as to whether all the changes made to the current management doctrines and charters can offer effective and sustainable methods of managing sacred sites. The way forward is to develop a sustainable framework for effective formal management imbued with knowledge found by studying traditional management systems.

3. Conclusion: Modern Conservation Learning from Traditional Knowledge

In the 20th Century, stakeholders of built environment were in search of new ways to meet the changing needs of the population with minimal environmental degradation and ongoing resources depletion brought about by the construction and development industry. The first decade of the 21st century has yielded a new terminology of modern conservation to indicate sustainable methods, such as green rating systems, sustainable developments with zero-energy ratings, and modern architecture to transform the significant impacts of this industry on the local, regional and global landscape (Zavrl and Zeren, 2010). The environmental problems are far from over, despite the presence of different conservation policies and practices, since the consumption of world resources rose from about six billion tons in 1900 to 49 billion tons in 2000 and continues to grow up to an estimated 59 billion tons more recently (Mellen, 2011).

As a result, there is now considerable research interest in creating new approaches related to traditional knowledge found in different parts of the world. According to Berkes (1993) research shows that the success of modern conservation depends on looking holistically at a number of factors, such as the local culture, traditional knowledge and practices, as these are each important for long-term sustainability. Clearly, traditional knowledge emphasises the intrinsic connection between people and their environment based on spiritual and cultural bonds, rather than extrinsic attachment dictated by the economic motives that are the central focus of today's modern conservation. Australian and Tanzanian examples are specific cases that represent the broad spectrum of Indigenous people throughout the world. de Jesus Jopela (2011) describes this as an inherent obligation: each generation needs to hand over a cared for landscape to the next generation, as its part of cultural identity and the very essence of custodianship.

Even if the view can be supported, people's behaviour is not spontaneous in the sense that everyday activities are influenced by and perceived in light of the individual's culture, environment and lifestyle. In order to maintain a proper and effective conservation approach, people first need to know their identity and acknowledge cultural values and traditional beliefs. Adopting this strategy will allow stakeholders in the built environment to integrate traditional knowledge regarding managing nature and landscapes with their critical responsibility to the ongoing development of their environment. The implementation of this approach will provide immense benefit to modern conservation by enriching interpretations of the landscape through expanding cultural understanding in the context of people and their interactions with the environment.

To sum up, traditional knowledge has remained intact over the course of history and, up to this day, Indigenous people around the world are still using this knowledge system in to manage their activities pertaining to the environment. For this reason, the World Conference on Science held in Budapest in 1999 recommended that traditional knowledge should be integrated into the field of conservation, particularly in the field of environmental development. Moreover, the UNESCO Convention of 2003 endorsed traditional knowledge being included as the element of intangible cultural heritage as it is part of the living culture that is embodied in people. Thus, it is important to acknowledge that traditional knowledge complements sustainable approaches of modern conservation in both natural and built landscapes, with the aforementioned Australian and Tanzanian examples being specific cases that represent the broad spectrum of Indigenous people throughout the world.

4. References

Abate, R., and Kronk, E. A. (2013). *Climate change and indigenous peoples: The search for legal remedies*. USA: Edward Elgar Publishing Limited.

Abele, F. (1997). Traditional knowledge in practice. *Arctic, 50(4)*, iii-iv.

Agrawal, A. (1995). Dismantling the divide between indigenous and scientific knowledge. *Development and Change, 26*(3), 413-439.

Ahmad, Y. (2006). The scope and definitions of heritage: From tangible to intangible. *International Journal of Heritage Studies, 12*(3), 292-300.

Appleton, J. (2014). *Values in sustainable development*. Abingdon, Oxon: Routledge.

Ashworth, G. J. and Tunbridge, J. E. (1990) *The Tourist-historic City*. London: Belhaven.

Australia ICOMOS. (1999). *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*. Victoria: Australia ICOMOS Secretariat, Deakin University.

Aygen, Z. (2013). *International heritage and historic building conservation: Saving the World's past*. New York: Routledge.

Berkes, F. (1993). Traditional ecological knowledge in perspective. In: Inglis, J.T. (ed.) *Traditional ecological knowledge: Concepts and cases (1– 9).* Ottawa: Canadian Museum of Nature.

Berkes, F., Colding, J., and Folke, C. (2000). Rediscovery of traditional ecological knowledge as adaptive management. *Ecological Applications, 10*(5), 1251-1262.

Bovensiepen, J. (2009). Spiritual landscapes of life and death in the Central Highlands of East Timor. *Anthropological Forum, 19 (3),* 323-338.

Bramble, D. M., and Lieberman, D. E. (2004). Endurance running and the evolution of homo. *Nature, 432(7015),* 345-352.

Brock, P. (2005). *Indigenous peoples and religious change.* Leiden and Boston: Brill.

Broome, R. L. (2002). *Aboriginal Australians, black responses to white dominance 1788-2001*. (3rd ed.). Crows Nest, Australia: Allen and Unwin.

Burroughs, W. J. (2005). *Climate change in prehistory: The end of the reign of chaos*. Cambridge University Press.

Bwasiri, E. J. (2011). The challenge of managing intangible heritage: Problems in Tanzanian legislation and administration. *South African Archaeological Bulletin, 66(194)*

Carmichael, D. L., Hubert, J., Reeves, B., and Schanche, A. (2013). *Sacred sites, sacred places*. London: Routledge.

Cleere, H. (2001). The uneasy bedfellows: Universality and cultural heritage. In Layton, R., Stone, P. G. and Thomas, J. (eds.). *Destruction and Conservation of Cultural Property.* London: Routledge.

Davis, M. (2007). *Writing Heritage: The Depiction of Indigenous Heritage in European-Australian Writings*. Melbourne and Canberra: Australian Scholarly Publishing and National Museum of Australia Press

de Jesus Jopela, A.P. (2011). Traditional custodianship: A useful framework for heritage management in southern Africa? *Conservation and Management of Archaeological Sites, 13*(2-3), 103-122.

Dodds, S. (1998). Justice and indigenous land rights. *Inquiry, 41*(2), 187-205.

Dudley, N., Higgins-Zogib, L., and Mansourian, S. (2009). The links between protected areas, faiths, and sacred natural sites. *Conservation Biology, 23*(3), 568-577.

Eliasson, I. (2000). The use of climate knowledge in urban planning. *Landscape and urban planning*, *48*(1), 31-44.

Frischknecht, M. (2006). Placemaking: From colonisation to architectonic style in Andean Patagonia. *The Journal of Architecture, 11*(2), 209-223.

Goldman, M. J., Roque De Pinho, J., and Perry, J. (2010). Maintaining complex relations with large cats: Maasai and lions in Kenya and Tanzania. *Human Dimensions of Wildlife*, *15*(5), 332-346.

Green, D., Billy, J., and Tapim, A. (2010). Indigenous Australians' knowledge of weather and climate. *Climatic Change, 100*(2), 337-354.

Hart, M. A. (2010). Indigenous worldviews, knowledge, and research: The development of an indigenous research paradigm. *Journal of Indigenous Voices in Social Work, 1(1),* 1–16.

Hewison, R. (1987). The heritage industry: Britain in a climate of decline. London: Metheun.

Hoppers, O. C. A. (2002). Indigenous knowledge and the integration of knowledge systems: Towards a conceptual and methodological framework. In: Hoppers, O.C. (ed.). *Indigenous knowledge and the integration of knowledge systems: Towards a philosophy of articulation* (2–22). Claremont, CA: New Africa Books.

Hough, M. (1990). *Out of place: restoring identity to the regional landscape. New Haven:* Yale University Press.

Hurcombe, L. (2007). A sense of materials and sensory perception in concepts of materiality. *World Archaeology, 39*(4), 532-545.

Iaccarino, M. (2003). Science and culture. *EMBO Reports, 4*(3), 220-223.

ICOMOS. (1994). *The Nara Document of Authenticity*. Paris: UNESCO

Jupp, J. (2001). *The Australian people: An encyclopedia of the nation, its people and their origins*. Cambridge: Cambridge University Press.

Kideghesho, J. R. (2006). *Wildlife conservation and local land use conflicts in western Serengeti, Tanzania*. PhD Thesis. Trondheim: Norwegian University of Science and Technology

Knappett, C. (2007). Materials with materiality? *Archaeological Dialogues, 14(01)*, 20-23.

Lawrence, D. (2009). *Tanzania: The land, its people and contemporary life*. Dar es Salaam, Tanzania: New Africa Press.

Lawrence, D. L., and Low, S. M. (1990). The built environment and spatial form. *Annual Review of Anthropology, 19*, 453-505.

Livingstone, D. (2000). Putting geography in its place. *Australian Geographical Studies, 38(1)*, 1-9.

Mabulla, A. Z. (2003). Archaeological implications of Hadzabe forager land use in the Eaysi Basin, Tanzania. In Kusimba, C., and Kusimba, S. (eds.). *East African Archaeology: Foragers, Potters, Smiths, and Traders (33–58).* Philadelphia: University of Pennsylvania Museum Press.

Mabulla, A. Z. (2005). The rock art of Mara region, Tanzania. *AZANIA: Journal of the British Institute in Eastern Africa, 40*(1), 19-42.

Manning, P. (2012). *Migration in world history.* London: Routledge.

Marquis-Kyle, P., and Walker, M. (2004). *The illustrated Burra Charter: good practice for heritage places*. Burwood, Victoria: Australia ICOMOS.

Masao, F. T. (1979). The later Stone Age and the rock paintings of Central Tanzania. *Studien Zur Kulturkunde Wiesbaden, 48*, 1-311.

Mazzocchi, F. (2006). Western science and traditional knowledge. *EMBO Reports, 7(5),* 463-466.

Mellen, T. (2011, May). *Global resources consumption to triple by 2050:UN.* http://www.morningstaronline.co.uk/index.php/news/layout/set/print/content/view/full/104611 (Accessed 25 March 2013)

Memmott, P. (2007). *Gunyah, goondie wurley: The aboriginal architecture of Australia.* St Lucia, Queensland: University of Queensland Press.

Memmott, P. (2012). Bio-architectural technology and the dreamtime knowledge of spinifex grass. *Journal of the International Association for the Study of Traditional Environments, 248,* 65-66.

Memmott, P., and Reser, J. (2000). Design concepts and processes for public aboriginal architecture. *11th Conference on People Physical Environment Research,* (Special Australian Aboriginal Double Issue no. 55-56, 69-86.

Mgumia, F., and Oba, G. (2003). Potential role of sacred groves in biodiversity conservation in Tanzania. *Environmental Conservation, 30(03),* 259-265.

Mirambo, I. (2004). Oral literature of the Sukuma. *Folklore: Electronic Journal of Folklore, 26,* 113-122.

Mumma, A. (2005). The link between traditional and formal legal systems. In Ndoro, W. and Pwiti, G. (eds.). *Legal frameworks for the Protection of Immovable Cultural Heritage in Africa* (22-24). Rome: ICCROM.

Nascimento, A. (2009). Reinventing modernity through tradition: Product development in traditional craftsmanship. *Nordes,* (3).

Ndembwike, J. (2006). *Tanzania: The land and its people.* Tanzania: New Africa Press.

Ndoro, W., and Pwiti, G. (2005). *Legal frameworks for the protection of immovable cultural heritage in Africa.* Rome: ICCROM

O'Connell, J. F., Hawkes, K., and Jones, N. B. (1991). Distribution of refuse-producing activities at Hadza residential base camps. In Kroll. E.M., and Price, T.D. (eds.). *The Interpretation of Archaeological Spatial Patterning* (61–76). Plenum, New York: Springer.

Orbasli, A. (2000). *Tourists in historic towns: Urban conservation and heritage management.* London: E and FN Spon.

Rapoport, A. (1969). *House form and culture.* Englewood Cliffs, NJ: Prentice Hall, Inc.

Reynolds, H. (1987). *The Law of the Land.* Ringwood: Penguin.

Romero, T. L. (2005). Sui generis systems for the protection of traditional knowledge. *International Law: Revista Colombiana De Derecho Internacional,* (006), 301-339.

Ross, A. (2008). Managing meaning at an ancient site in the 21st century: The Gummingurru aboriginal stone arrangement on the Darling Downs, Southern Queensland. *Oceania, 78(1),* 91-108.

Schorske, C. (1981). *Fin-de-Siècle Vienna: Politics and Culture.* New York: Vintage Books.

Stovel, H. Stanley-Price, N. and Killick, R. (eds.) (2005). *Conservation of living religious heritage: papers from the ICCROM 2003 Forum on Living Religious Heritage, conserving the sacred.* Rome: ICCROM

Taçon, P. S. (1989). From the 'Dreamtime' to the present: The changing role of aboriginal rock paintings in western Arnhem Land, Australia. *The Canadian Journal of Native Studies, 9(2),* 317-339.

Tagon, P. S. (1991). The power of stone: Symbolic aspects of stone use and tool development in western Arnhern Land, Australia. *Antiquity, 65,* 192-207.

Tanzania National Bureau of Statistics. (NBS, 2012). Statistical abstract. http://www.nbs.go.tz/Stastical%20Abstract/Statistical%20Abstract%20Report%202012.pdf (Accessed 20 Februray 2014).

Taylor, B. R., (2005). *The encyclopedia of religion and nature (Vol 2).* London and New York: Thoemmes Continuum.

The Australian Bureau of Statistics (ABS, 2011). Census of Population and Housing - Counts of Aboriginal and Torres Strait Islander Australians. http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/2075.0main+features32011 (Accessed 20 Februray 2014).

The Australian Bureau of Statistics (ABS, 2012). Year Book Australia. http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1301.0~2012~Main%20Features~Australia's%20climate~143 (Accessed 20 Februray 2014).

UNESCO. (1998). The Operational Guidelines for the Implementation of the World Heritage Convention Sections. Paris: UNESCO

UNESCO. (2003). Convention for the Safeguarding of the Intangible Cultural Heritage. 32nd Session of the General Conference. 29 September–17 October2003, Paris: UNESCO.

UNESCO. (2008). *Operational Guidelines for the Implementation of the World Heritage Convention*. Paris: UNESCO

United Nations. (2009). *State of the world's indigenous people.* New York: United Nations Publications.http://www.un.org/esa/socdev/unpfii/documents/SOWIP_web.pdf (Accessed 20 Februray 2014).

Verschuuren, B. (ed.) (2010). *Sacred natural sites: Conserving nature and culture*. London: Earthscan.

Vlaenderen, H. van. (1999). Local knowledge: What is it and why and how do we capture it? In: Kauzeni A. (Ed*). Selected papers from First National Workshop held in Morogoro, Tanzania. Gender, Biodiversity and Local Systems to Strengthen Agricultural and Rural Development: Links Report*. Grahamstown: Rhodes University.

Webb, E. K. (1997). *Windows on meteorology: Australian perspective*: Melbourne: CSIRO Publishing.

Whap, G. (2001). A Torres Strait Islander perspective on the concept of indigenous knowledge. *The Australian Journal of Indigenous Education, 29*(2), 22.

Wilby, R. L. (2007). A review of climate change impacts on the built environment. *Built Environment*, *33*(1), 31-45.

Wild, R., McLeod, C., and Valentine, P. (eds.) (2008). *Sacred natural sites: Guidelines for protected area managers (No. 16)*. Gland , Switzerland: IUCN.

Wirilander, H. (2012). Preventive conservation: A key method to ensure cultural Heritage's authenticity and integrity in preservation process. *E-Conservation Magazine, No. 24,* 164-176. http://www.e-conservationline.com/content/view/1081(Accessed 10 March 2014).

Wulf, C. (2010). Education as transcultural education: A global challenge. *Educational Studies in Japan: International Yearbook, 5*, 33-47.

Zavrl, M.S., and Zeren, M.T. (2010). Sustainability of urban infrastructures. *Sustainability, 2(9),* 2950-2964.