Ghost of the Forest: the Tangible and Intangible in Natural and Cultural Heritage

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ABSTRACT

Understanding the close interconnectedness of cultural and natural, tangible and intangible heritage is central to conservation efforts. This point is illustrated by examples in which works of culture have lost their original cultural or natural context – and this includes intangible natural phenomena. Further examples are given in which biological species survived as a genetic continuum but were changed in terms of their intangibles, i.e. their behaviour, in ways that can be perceived by human observers.

In this article it is argued that the addition of a fourth category of 'intangible natural heritage' to the existing categories of World Heritage would strengthen conservation efforts and bring forward the discussion with an integrated understanding of natural and cultural heritage.

Keywords

Intangible Natural Heritage, co-extinction of cultural and biological phenomena, conservation, artistic inspiration, bio-diversity, bio-cultural interaction, ephemerality, World Heritage.

The interdependence and the fragility of tangible and intangible heritage

Ultimately, buildings, human-made structures and artwork would be merely near-surface biogenic sediments resulting from highly complex processes of bio-turbation if it were not for the cultural motivation behind their creation and the meanings attached to them.

They are a tangible, stable, immotile vehicle to transport and stabilise intangibles through time, or, as phrased by Singer (2006), *Tangible heritage is expressed in objects, concrete matter, enduring years and sometimes centuries, carrying with it some of the substance of human life, feeling, and thought.*

The cultural significance of ancient tangible heritage in our times is often very distinct from the one the items had at the time of their creation and at different points in their history. We know that it is our task to preserve and conserve, for instance, the henges, chamber tombs,

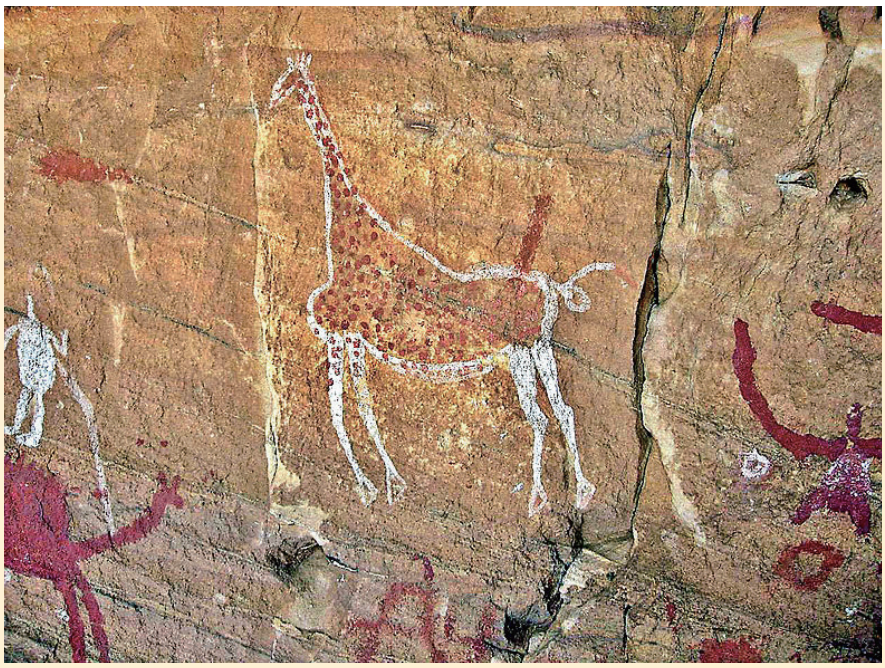

Plate 1
Rock paintings of domestic and wild animals at the World Heritage Site of Tadrart Acacus in Libya. The tangible and intangible properties of the natural species inspired human artists. Dec 2005.
Source: https://commons.wikimedia.org/wiki/File:Tadrart_Acacus_1.jpg?uselang=de

menhirs and tumuli of Ireland's Palace of the White Cow (*Brú na Bóinne*), the monumental mounds of Poverty Point on the banks of Boeuf River in Louisiana, or the red and white wild animals and cattle at Tadrart Acacus, Libya. However, we struggle to understand the motives behind their creation. [Plate 1] We do not know what ceremonies and rites, what songs, chants and dances were part of these cultural sites. *Pre-history teases us with tidbits* (Box: 1969).

As Singer (2006) points out:

... that which cannot be touched only takes momentary shape in the mind, the speech and the motion of a human being. The carriers of intangible heritage are mortal, and therefore intangible heritage dies with each person and is reborn with each new member of a community. Hence its multiplicity and vitality, but also its fragility ...

'that which cannot be touched' and is yet passed on as cultural heritage is defined in the *Convention for the Safeguarding of the Intangible Cultural Heritage* (2003) as follows:

The "intangible cultural heritage" means the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history...

This definition takes account of both the inherent dynamic and the link between intangible and tangible heritage, with both the human-made and the natural environment.

Humanity 'forgetting' the original meaning of some sites and works such as the ones referred to above illustrates the ephemerality of the intangible cultural heritage, even when it is firmly linked to a place or structure. Intangible cultural heritage is even less stable through time and more fragile if its root and anchor in the tangible world outside our minds is not a building or a geological feature *enduring years and sometimes*

centuries or even millions of years, but another living creature, mortal as we are.

The UNESCO *Representative List of Intangible Cultural Heritage* includes a considerable number of such instances, for example, falconry, listed in no fewer than thirteen countries, various examples that involve horses or cattle such as the rice transplanting ritual in Mibu, Japan, the cultural space of the Yaaral and Degal in Mali with festivities on the occasion of cattle herds crossing the Niger river, or the Emirates *Al-Taghrooda* chanted poetry that is sung when riding on camel-back in rhythm with the animal's motion. All of these cases of intangible heritage could be lost or would lose their 'life' and be reduced to a text and pictures or recordings if the living creature that forms the tangible, biological partner in this 'symbiosis' was gone.

Living nature as a source of intangible heritage

Evidently, nature in this symbiosis must not be reduced to its tamed and domesticated form, as represented for example by domestic livestock.

Both tangible and intangible culture created by *communities and groups in response to their environment and in interaction with nature* (UNESCO: 2003) do provide an echo of an experienced reality which is not only limited to the cultured surroundings. It includes experience within and outside the human-dominated sphere and the human-shaped space. The rock art mentioned above shows not only domestic animals but also the wild fauna that impressed the observers of the time as it impresses us today, and led them to reflect and communicate what they saw in artwork, and, we may well assume, in legends, songs, stories and other non-tangible art forms. The latter are likely to have enriched the 'static' artwork with descriptions of the behaviour, vocalisations and other non-tangible properties the respective animals displayed, and that cannot be captured in painting.

In its encounter with nature, culture draws on both tangible objects and intangible phenomena, and produces both tangible and intangible works, thus creating heritage. By extension, a behaviour or other intangible feature of an animal may have been a source of intangible cultural heritage, which in turn would have been the basis of, or developed in a dialogue with its tangible cultural expressions.



Plate 2
Whale skeletons found in Wadi al-Hitan, Egypt, give us an insight into these creatures' anatomy but their behaviour remains unknown to us. March, 2015
Source: http://upload.wikimedia.org/wikipedia/commons/b/b8/Wadi_Al_Hitan1.jpg?uselang=de



Plate 3
The Passenger pigeon migrated in immense flocks in search of food. This may still affect the species composition of some forests. Aug 2013. Source: http://upload.wikimedia.org/wikipedia/commons/ 0/0e/Ectopistes_migratorius_ULaval_1.jpg



Plate 4
The Kagu (*Rhynochetos jubatus*) is also known as the 'Ghost of the Forest'. Its calls are echoed in the traditional songs and dances of New Caledonia. May, 2006. Source: https://upload.wikimedia.org/wikipedia/commons/6/6b/Juvenile_kagu.jpg?uselang=de

This interlinkage becomes (in a perhaps daring analogy to knock-out mutants in biological model systems) particularly apparent when a given species is extinct and only a tangible, but lifeless object remains. The bones excavated from the sediment at Alberta's Dinosaur Provincial Park, or at Germany's Grube Messel or the cetacean skeletons that protrude from the sand of Egypt's Valley of the Whales - Wadi al-Hitan - not by coincidence all examples of the world's natural heritage, provide an insight into these animals' body structure and anatomy. However, knowledge of their behaviour, as can be gained even with modern species from long observation or interaction with living specimens, remains scarce. [Plate 2] Much like prehistory, paleontology *teases us with tidbits*.

More recently, extinct species leave us at times with more than the tangible witnesses of the physical existence of their bodies, the bones and other sub-fossil material. In some cases the now-disappeared species built themselves something like a monument through their behaviour – the intangible – leading to the formation of a tangible material feature.

Some buffalo wallows are thought to remain as relics even today, even where the species has long since been eradicated, and some bison trails that were easily visible when the first European settlers arrived have been traced - and thus outlined in the landscape - by human trails and eventually by modern railway lines and highways. In North America, the passenger pigeons' nomadic migrations in immense flocks, in combination with their food preference, may to this day affect the species composition of forests in some areas, and there are numerous other examples of animals that are now gone, but which have left an impact in the earth's biomantle and thus a now-fading imprint on the landscape. [Plate 3]

A highly intriguing ancient avian example is found on the island of New Caledonia and the Isle de Pins, the one-time haunt of the *Sylviornis neocaledoniae*, or Du. About three millennia ago the first Lapita settlers on the island hunted this large, flightless, megapode-related bird into extinction, with the dogs and pigs they introduced probably also taking a heavy toll on its population. What remains of this species, other than a few bones, are the massive mounts or *tumuli* it built for breeding (Green and Mitchell: 1983; Mourer-Chauviré and Poplin: 1985).

This bird, however, also left another intangible heritage in the form of a cultural memory that appears to have lasted into our own times. New Caledonian oral history provides a vague depiction of the bird, including some aspects of its behaviour (Poplin: 1980). According to some stories it was *aggressive, could move rapidly using its wings for balance, was reddish in coloration with a bony, solid casque in the shape of a star on the head, and laid a single egg* (Hume and Walters: 2012, p.36). That

birds and their song and behaviour played an important role in the very culture that once encountered the *Sylviornis* can be presumed based on the fact that in New Caledonia, for example, the calls of the flightless Kagu, (*Rhynochetos jubatus*) are echoed in traditional songs and dances, and are understood as messages to be interpreted by the chiefs. A local name for it was *ghost of the forest* (del Hoyo et al.: 1996, 223). [Plate 4]

The world is rife with examples of extinct species of whose behaviour we know nothing or next to nothing, and which can no longer inspire any cultural reflection. In some cases, however, we can at least perceive a faint trace in the shape of cultural documents or a cultural memory. Oral accounts from Madagascar tell us of the 'floppy eared water cows', reminding a zoologically- and paleontologically-versed reader of a pygmy hippo, or they mention giant birds and large primate-like, lemur-like animals. Some of these sources were collected long before the modern flood of printed and electronic information could have caused an over-layering of potentially authentic lore with modern stories. Still, matching the presumed appearance and behaviour of the paleontologically-studied candidate species, or their extant relatives, these accounts suggest that a fossil memory of the long-gone megafauna of the island is not impossible (Burney and Ramilisonina: 1998, and references therein). In North America the possibility of a fossil memory of the giant beaver, *Castoroides ohioensis*, or even mastodons as *pere aux boeuf* is at times discussed (Strong: 1934; Lankford: 1980; Beck: 1972).

Oral history also seems to describe the Antillean cave rail (*Nesotrochis debooyi*). Ornithologist Alexander Wetmore, when researching in Puerto Rico in 1912

...was told that in earlier days the natives were accustomed to hunt a large bird known as the carrao on foot with dogs in the early morning when vegetation was drenched with heavy dew. As the bird fled from its pursuers through the grass and fern, its feathers in a short time became so thoroughly soaked that it was unable to fly and eventually was tired out and captured alive (Wetmore: 1927, p.342).

Not surprisingly the species became extinct, and with it, eventually, all the stories and folklore that may have grown around it.

Another Caribbean example is the Bahamian barn owl (*Tyto pollens*), an enormously large flightless strigiform that possibly survived as late as the 16th century and may have been the source for the Androsian tales of a spooky and malevolent humanoid creature known as Chickcharnie (Hume and Walters: 2012, p.193). This appears plausible by comparison, for example, with the



Plate 5
The Imperial woodpecker (*Campephilus imperialis*) which threw *himself over on his tail, with outspread wings, presenting a warlike front of threatening beak and talons*. This pair are displayed in the Naturhistorische Landessammlung Wiesbaden, Germany. Jan 2003 Source: https://upload.wikimedia.org/wikipedia/commons/9/95/Kaiserspecht_fg02.jpg

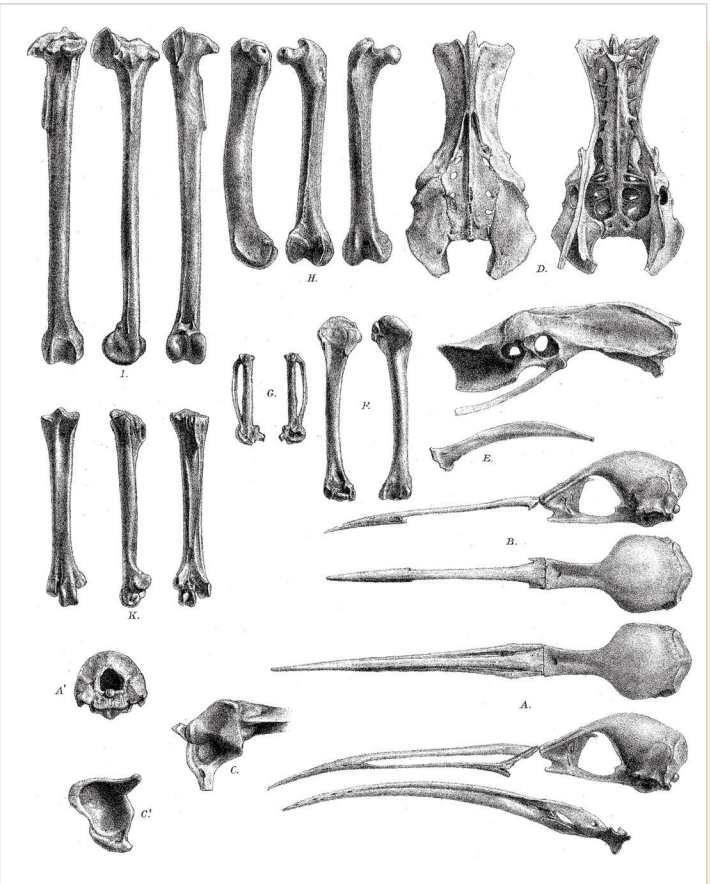

Plate 6
The 'peculiar manners' of *Erythromachus leguati* included the phenomenon that *If you offer them anything that is red, they are so angry that they will fly at you to catch it out of your hand.* Only its bones survive. (1879) July, 2013 Source: https://upload.wikimedia.org/wikipedia/commons/a/ab/Aphanapteryx_leguati.jpg?uselang=de

above-mentioned role of the Kagu as the 'Ghost of the forest' and considering *the effect such a large, pale, three-toed bird with almost human features would have on the Andros inhabitant who happened to spot it in the dim light of the forest!* (Sweeting: 1983).

Lost, but on record

The transition between reasonably plausible accounts of extinct species and fossil memory to the more fanciful is rather blurred, and defies scientific exploration and scholarly confirmation. In some cases, however, the human encounter with now-extinct species did not create legends, but nonetheless the observed behaviour found a resonance in descriptive prose or even natural history.

Intriguingly, it is often defensive behaviour or a behaviour that is in some way or other related to the species being hunted that is documented, as observed at the moment when yet another individual of the rare species was killed, delivering a snap-shot in extinction history.

There would have been, for instance, the defence behaviour of the Imperial Woodpecker (*Campephilus imperialis*), throwing *himself over on his tail, with outspread wings, presenting a warlike front of threatening beak and talons* (Nelson: 1898), a most peculiar performance that would not be imaginable exclusively on the basis of the material remains of the bird skins that are mounted and on display in museums. [Plate 5]

A more ancient example is found in the Indian Ocean in the case of *Erythromachus leguati*, a flightless rail native to the island of Rodrigues. In the writings of French naturalist, François Leguat, dating to the late 17th century, we read *of its peculiar manners* which included this: *If you offer them anything that is red, they are so angry that they will fly at you to catch it out of your hand* (Leguat: 1891, p.342). [Plate 6]



Plate 7
The Solitaire (*Pezophaps solitaria*) was said to *...make a great noise with their wings when angry, and the noise is something like thunder in the distance.* (1891) Nov. 2014 Source: http://upload.wikimedia.org/wikipedia/commons/5/51/Leguat1891solitaire.jpg

Rodrigues also provides the example of the Solitaire (*Pezophaps solitaria*), a bird which was flightless, having just *a small stump of a wing which has a sort of bullet at its extremity, and serves as a defence* (Tafforet in Leguat *et al*: 1891, p.334). These birds were reported to *...make a great noise with their wings when angry, and the noise is something like thunder in the distance* (ibid. p.334). [Plate 7] With the Solitaire's extinction in the mid-18th century the sound of the thundering wings is forever lost, and will not surprise, scare, or inspire anyone any more.

As earlier accounts describe the bird as less defensive, ornithologist Alfred Newton suggested that between the time of Leguat and Tafforet *...the ill-fated bird seems to have learnt to resent injurious treatment by biting* ... (Leguat, F.: 1891, p.334). One may thus speculate that the bird's behaviour changed; interestingly, it seems to have turned from tameness to defensiveness rather than to shyness, as in many other cases of bird species on oceanic islands hitherto unvisited and undisturbed by man.

Survivors that are changed forever

The process of changing behaviour in animals of naturally predator-free oceanic islands - the loss of the 'island tameness' - is famously discussed by Darwin with reference to the birds of the Falkland Islands, which he found to be much less tame than they were described in earlier accounts. Also, in the Galapagos, Darwin's description suggests that the birds, *although certainly very tame*, were already losing their insular fearlessness (Darwin: 1839, p.476).

This is an observation that points to the fact that the conservation of a species as a genetic continuum does not necessarily imply that the creatures' behaviour, an intangible feature, is at the same time conserved, passed on and kept alive.

There are a large number of examples of different behavioural changes in animals that are caused by a multitude of human impacts, such as habitat fragmentation, altered fluxes of nutrients, hunting, the introduction of competing or predatory species, the blocking of migratory corridors and so on.

Again, the remote island of Rodrigues provides another avian case, namely of the Rodrigues Fody (*Foudia flavicans*). There are indications that this bird was originally granivorous, but changed to an insect diet after the introduction of the Madagascar Fody (*Foudia madagascariensis*) in the 19th century (Hume and Walters: 2012, p.287; Cheke and Hume: 2008, p.42). Other birds contribute to the story of altered behaviour by changing their migratory pathways in response to human activity, be it wind parks or the slaughter of migratory songbirds in Malta and other countries.

The examples are not limited to birds. In North America, bears under pressure from hunting, now avoid hunters by shifting their activity from day to night (Miller: 2012). In Africa, poaching disrupts kinship structures and as a consequence alters elephant behaviour (Archie and Chiyo: 2012). We may therefore still see the physical

appearance of elephants, but their behaviour, the intangible element, will already be much altered, even though this may as yet only be evident in areas where they have frequent contact with humans. Elephants may have undergone more than one behavioural change due to contact with humans. There is in fact a theory that African and Asian mega-herbivores were the only ones to survive the impact of proto-historic human beings as they quickly developed a life-saving wariness.

Whales have come to avoid humans due to the relentless slaughter that was already observed in the 19th century, with one author (Thompson: 1839, p.223) noting that *The whales are unceasingly pursued from one point to another over every part of the ocean, rendering them more shy*, which almost appears to echo the observation quoted in Darwin's work published the same year (Darwin: 1839, p.476).

One particular behaviour that may have been altered due to whaling and disturbance is whales swimming up rivers. Judging from historical sources and modern news reports, whales appear to have entered bays and river mouths more frequently, sometimes so often that it seems as if it was a regular habit. Historical documents frequently mention whales appearing in estuaries on the North American Atlantic coast, and swimming up the Columbia, Hudson, Delaware and other rivers (Robischon: 2012, p.265). Whales still sometimes venture up these rivers, however it now appears to be a much less frequent event. This may not only be due to a reduction in total numbers, but also to noise and the typically heavy traffic of vessels in the estuaries. [Plate 8]

The prehistoric predecessors of those whales entering California's Klamath River in recent years may have inspired native legends (Kroeber: 1959). We do not know whether aboriginal Tasmanian folklore reflected the presence of whales in the island's rivers and estuaries as this intangible cultural heritage is lost. Natural history, however, provides a glimpse of what kinds of natural cetacean phenomena they may have observed. In Tasmania, southern right whales (*Eubalaena australis*) were not only commonly seen along the coast during their migration up north, but were found in abundance in the mouth of the Derwent at Hobart and swam up the river in large numbers. The sound of their spouting famously annoyed the Governor whose sleep was disturbed, and he wondered whether *the damned blubber hunters couldn't kill a few more of them* (Villiers:



Plate 8
Whales entering rivers intentionally, possibly to rest or to get rid of marine parasites in fresh water, may have been a more common phenomenon in the past. This humpback whale calf and its mother entered the Sacramento River, California in 2007.
Source: https://upload.wikimedia.org/wikipedia/commons/a/a0/CalfDawnBreachWindsurfers.jpg?uselang=de

1931). They could and they did, and the concert of blowing whales is heard no more. Only in 2014 were whales again seen in this river. (Mather: 2014).

Due to conservation efforts whales survive, but their behaviour is altered, and with it something that would have sparked cultural reflections, stories that would have continued to grow into the tapestry of human cultural reflection on nature and intangible cultural heritage.

A fourth pillar of world heritage?

Considering the deep-seated interdependence between the intangible cultural heritage and the tangible cultural and natural heritage (UNESCO: 2003), taking account of the importance of bio-cultural interaction and by an extension of the links and inter-relationships between cultural and natural heritage, and in the light of the examples given above, it appears appropriate and important to further the discourse on the concept of intangible natural heritage.

The term 'intangible natural heritage' is a relatively new one and there is no general and common definition of it as yet. Dorfman and Carding's (2012) understanding of the term includes: *The environmental forces that create biological and geological entities, the phenomena that these entities produce, and their interactions with humans and human communities*. Dorfman and Carding (2012) distinguish between *anthropogenic intangible natural heritage in which humans create the heritage in the form of traditions focused on nature* and *naturogenic intangible natural heritage*. Using the example of the smell of a horse for the former they illustrate *how intangible natural phenomena only become intangible natural heritage when being described in relation to the human experience*. For the latter they chose the examples of *the noise of a river eroding its surrounding rocks, the smell of a pine forest, the call of a bird and the whistle of the wind*. On the one hand this appears to fit Stottrop's (2012) statement that: *As comprehensive intangible natural heritage, one could understand all natural elements that, though untouchable, touch the human senses*. On the other hand it appears consistent with the suggestions of authors who have in the past discussed particular atmospheric phenomena and the resulting local atmosphere (Morris: 2013), or the terms and expressions for certain atmospheric conditions (Carbonell: 2012) as 'heritage sites' or 'intangible heritage'. Against the use of the term for geological and atmospheric examples, one may argue that these intangible phenomena, while impressing us with their contribution to the natural soundscape and atmosphere, do lack a non-human analogy to the criterion of intangible cultural heritage - according to the UNESCO definition (2003) - of being *transmitted from generation to generation* and being *constantly recreated by communities and groups in response to their environment*.

Jin and Yen (2012) offer examples of cicadas and crickets that are harbingers of spring and autumn, respectively, in China. The insects themselves being tangible natural heritage, and the cultural reflection of their song being intangible cultural heritage, their song itself could be understood in the sense of Dorfman and Carding (2012) as *naturogenic intangible natural heritage*, or, in the sense of this essay, in the narrower understanding focusing the entire concept on living 'fragile', and in particular, behavioural phenomena, as plainly *intangible natural heritage*.

Considering that deterioration or disappearance of any item of the cultural or natural heritage constitutes a harmful impoverishment of the heritage of all the nations of the world (WHC: 1972) it is desirable that we develop the concept of intangible natural heritage further.

It may strengthen the World Heritage idea by contributing to the development of a process leading towards a comprehensive and inclusive concept of tangible and intangible, natural and cultural, heritage. Establishing the concept in academic discourse may in the long run help to develop the possibility of recognising some biogenic phenomena as intangible natural heritage with importance and significance as part of the common heritage of humanity. This in consequence, may yield some very tangible and fruitfully controversial outcomes: practices such as the slaughter of whales still undertaken by some countries, or the massacres of migratory birds tolerated, under some pretext or other, in others, would thus become seen as an assault on a common, shared heritage.

REFERENCES:

- Archie, E.A., Chiyo, P.I., 2012. 'Elephant behaviour and conservation: social relationships, the effects of poaching, and genetic tools for management' in *Molecular Ecology*, 21(3):pp.765-778.
- Box, T., 1969. 'Listening To The Land Where The Buffalo Roamed' in *Rangelands* 23(2): p.22.
- Burney, D.A. and Ramilisonina, 1998. 'The kilopilopitsofy, kidoky and bokyboky: accounts of strange animals from Belo-sur-Mer, Madagascar, and the megafaunal "extinction window"' in *American Anthropologist* 100(4): pp. 957-966.
- Beck, J. C., 1972. 'The Giant Beaver: A Prehistoric Memory?' in *Ethnohistory* 19(2): pp.109-122.
- Cheke, A.S. & Hume, J.P., 2008. *Lost land of the Dodo: the ecological history of the Mascarene Islands*, A. & C. Black publishers (Poyser imprint) London.
- Carbonell, E., 2012. 'The Catalan fishermen's traditional knowledge of climate change and the weather: A distinctive way of relating to nature' in *International Journal of Intangible Heritage*, Volume 7:pp.61-75.
- Darwin, C., 1839. *Voyages of the Adventure and Beagle*, Vol III. Henry Colburn, London.
- Del Hoyo, J., Elliott, A. & Sargatal, J. (eds.), 1996. *Handbook of the Birds of the World, Volume 3: Hoatzin to Auks*. Lynx Edicions, Barcelona.
- Dorfman, E. & Carding, J., 2012. 'Towards a Unified Concept of Intangible Natural Heritage' in Dorfman, E. (ed.) *Intangible Natural Heritage: New Perspectives on Natural Objects*. Routledge, New York.
- Green, R.C. & Mitchell, J.S., 1983. 'New Caledonian cultural history: a review of the archaeological sequence' in *New Zealand Journal of Archaeology*, 5: pp.19-67.
- Hume, J.P., & Walters, M., 2012. *Extinct Birds*. T & AD Poyser, Bloomsbury, London.
- Jin, X. & Yen, A.L., '2012. Poetically, Man Dwells With Crickets: Nature and Culture of Chinese Singing Insects' in Dorfman, E. (ed.) *Intangible Natural Heritage: New Perspectives on Natural Objects*. Routledge, New York.
- Kroeber, T., 1959. *The Inland Whale*. Indiana University Press, Bloomington.
- Leguat, F., 1891. *The voyage of Francois Leguat of Bresse, to Rodriguez, Mauritius, Java, and the Cape of Good Hope*. Hakluyt Society, Volume II, London.
- Lankford, G. E., 1980. 'Pleistocene Animals in Folk Memory' in *Journal of American Folklore,* 93: pp.293-304.
- Mather, A., 2014. 'It's mighty mouth: Whales feeding in River Derwent' in *The Mercury*, July 26, 2014.
- Morris, B., 2013. 'Air Today, Gone Tomorrow: the *Haar* of Scotland and Local Atmosphere as Heritage Sites' in *International Journal of Intangible Heritage*, Volume 8: pp.88-101.
- Mourer-Chauviré, C. & Poplin, F., 1985. 'Le mystère des tumulus de Nouvelle-Calédonie' in *La Recherche* 16: p.1094.
- Nelson, E.W., 1898. 'The Imperial Ivory-Billed Woodpecker, *Campephilus imperialis*' (Gould) in *The Auk* 15(3): pp.217-223.
- Poplin, F., 1980. *'Sylviornis neocaledoniae* n.g., n.sp. (Aves), ratite eteint de la Nouvelle-Caledonie' in *Comptes Rendus des Séances de l'Academie des Sciences,* Série D: Sciences Naturelles. 290: pp. 691-694.
- Robischon, M., 2012. *Vom Verstummen der Welt*. Oekom München.
- Roots, C., 2006. *Flightless Birds*. Greenwood Publishing Group.
- Singer, S., 2006. 'Preserving the Ephemeral: the International Museum Day 2004 in Mexico' in *International Journal of Intangible Heritage*, Volume 1: pp.69 -73.
- Stottrop, U., 2012. 'Terra Cognita, Down and Under, Living Stones and the Sound of Stones: Reflections on Four Exhibitions' in Dorfman, E. (ed.) *Intangible Natural Heritage: New Perspectives on Natural Objects*. Routledge, New York.
- Strong, William Duncan, 1934. 'North American Indian Traditions Suggesting a Knowledge of the Mammoth' in *American Anthropologist,* 36(1): pp.81–88.
- Sweeting, W. H., 1983. Letter to the editor of *National Geographic,* 163: p.142.
- Thompson, B. F., 1839. *History of Long Island: Containing an Account of the Discovery and Settlement; with*

Other Important and Interesting Matters to the Present Time. E. French, New York.
- UNESCO, 2003. *Convention for the Safeguarding of the Intangible Cultural Heritage.*
- Villiers, A., 1931. *Vanished Fleets*. Charles Scribner's Sons, New York.
- Wetmore, A., 1927. *Birds of Puerto Rico and the Virgin Islands*, Vol.9, p. 342. New York Academy of Sciences, New York.
- WHC, 1972. *Convention Concerning the Protection of the World Cultural and Natural Heritage* .

SOURCES

All sources for the listed images were accessed during April 2015:

- Plate 1 https://commons.wikimedia.org/wiki/File:Tadrart_Acacus_1.jpg?uselang=de
- Plate 2 http://upload.wikimedia.org/wikipedia/commons/b/b8/Wadi_Al_Hitan1.jpg?uselang=de
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