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The Virtual and the Vegetal: Creating a ‘Living’ Biocultural Heritage Archive through Digital Storytelling Approaches

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Abstract

FloraCultures is an online archive currently being developed in consultation with Kings Park and Botanic Garden in Perth, Western Australia. The archive will showcase the ‘botanical heritage’ of indigenous plant species found in the extant bushland areas of Kings Park near the heart of the city. A selection of multimedia content (text, images, audio recordings, video interviews) and social media approaches (crowd-sourcing, interactivity, participatory media) will be brought together to highlight the cultural value of Perth’s bio-cultural diversity. This paper will analyse FloraCultures in terms of Stuart Hall and Jacques Derrida’s theories of ‘the living archive’ in tandem with recent research into ‘digital storytelling’ through new media. Derrida argues that the living archive is brought into existence through the dialectic between the death drive (Thanatos) and the conservation drive (Eros), and that an interdisciplinary field of ‘archiviology’ is required to understand and develop archives in their broader cultural contexts. For Hall, the living archive is defined by heterodoxy as a participatory space consisting of a multitude of materials and in which public exchange can be fostered. I argue that a living archive in the digital era is brought to life through digital storytelling techniques that allow users to contribute to, participate in and create their own stories as part of an ecology of the archive. In ecological terms, FloraCultures brings plant diversity – and the factors which impact it – to bear on the archive and the archivable.

Introduction

FloraCultures is an open-access, online archive of Western Australian bio-cultural heritage. The pilot project (2013–15) focuses on a selection of indigenous plant species found in the bushland areas of Kings Park and Botanic Garden in the capital city Perth (Ryan, 2013). The aim is two-fold: to develop a concept of ‘botanical heritage’ through a broad, interdisciplinary and multimedia array of materials, including textual works, visual art and oral histories; and to develop an online structure to preserve these digital (and digitised) artefacts that also allows the public to upload their own heritage content: memories, narratives, historical writings, visual artworks and other artefacts related to Western Australian plants. The desired outcome of the FloraCultures archive is a dynamic digital environment weaving together extant and user-generated or user-sourced content through archival, ethnographic and digital design strategies (Ryan, 2014).

In this paper, I will attempt to develop the conceptual foundation of FloraCultures further in relation to theories of ‘the living archive’ (Derrida & Prenowitz, 1995; Hall, 2001; Refsland et al., 2007) and the exploration of ‘nonlinear narratives’ through digital storytelling approaches (Alexander, 2011; Lambert, 2013; Sanderson, 2009). In applying theories of the living archive to FloraCultures, I will consider, in detail, Jacques Derrida’s Freudian theory of the archive presented in *Archive Fever* (1995) and Stuart Hall’s articulation of heterodoxy as a core value in archival work. I conclude that, rather than a living archive, FloraCultures can be conceptualised as an

‘ecology of the archive’ – a dynamic and interconnected (not a metaphorically living) eco-digital system that integrates diverse living communities of users (present and future) as well as heritage materials of disparate historical, botanical and disciplinary provenance.

FloraCultures: A bio-cultural heritage archive

FloraCultures is presently being designed in consultation with Kings Park and Botanic Garden – a popular plant conservation, education and tourism institution, located in Perth, Western Australia (WA). In addition to a series of cultivated garden installations featuring plant communities from different parts of WA, Kings Park preserves extensive non-cultivated bushland areas consisting, for the most part, of indigenous’ plants – defined as those present in the environment at the time of British settlement in 1829. ‘Indigenous’, ‘native’ or ‘local’ plants (e.g. kangaroo paws) are usually contrasted to ‘exotic’, ‘invasive’ or ‘naturalised’ plants (e.g. cape daisies) that arrived after colonial settlement, from elsewhere in Australia or from South Africa, Europe or North America in particular. Exotic plants were introduced to the Perth area unintentionally by colonists (e.g. in ship ballasts or cargo) or intentionally by agriculturalists (e.g. as food for livestock or to control land erosion). The pilot project is designed to call attention to and promote community engagement with the ‘botanical heritage’ of Kings Park’s indigenous bushland plants, including iconic Western Australian species such as kangaroo paws, donkey orchids, banksias and marri trees (Ryan, 2013). The extant botanical diversity of Kings Park is representative of adjacent urban and suburban areas (including the Perth CBD, Northbridge area and western suburbs) where much of biodiversity has been fragmented or lost.

The approach to natural heritage conservation developed in FloraCultures reflects the ethos that biological and cultural heritage forms are interwoven – an interdependence expressed in the concept ‘biocultural diversity’ posited in recent years by anthropologists, historians and heritage scholars (e.g. Maffi, 2001). In theory and practice, the interdisciplinarity of botanical heritage – as both biological and cultural, that is, as bio-cultural – is an asset in terms of archival scope, inclusiveness and prospective relevance to different users of the present and future. Circumscribed scientifically, botanical heritage would prioritise the protection of living plants in their natural habitats through the empirical methods of conservation science (e.g. seed propagation, habitat protection, weed control or the introduction of pollinators). Although efficient strategies for conserving plants, these approaches tend to exclude the cultural, social, artistic and intangible dimensions of human-plant interactions in a place over time (Ryan, 2012). Seeking a middle ground between disciplines – and more broadly between the sciences and the humanities – FloraCultures examines the complex intersections between cultural and biological heritage, where the decline of plants in the environment (i.e. living, growing organisms) affects the vitality of the cultural heritage involving those plants (i.e. paintings, poetry, music, memories).

Aiming for inclusiveness, plurality and interactivity, FloraCultures combines multimedia content (text, images, audio recordings, video interviews) with social media approaches (crowd-sourcing, user-generated content) to underscore the importance of Perth’s biodiversity. For as Derrida comments, ‘the question of the archive is not [...] a question of the past’ (Derrida & Prenowitz, 1995, 27). Known as one of the world’s most bio-diverse urban areas, Perth and surrounding suburbs are rapidly losing biodiversity as a consequence of bushland clearing, plant diseases and other factors. The continued loss of irreplaceable flora and fauna in Perth is a constant, looming reality for those working in conservation. While the building of a bio-cultural heritage archive will not necessarily protect actual biota in their habitats, it does offer a compelling way to rationalise their ongoing protection by appealing to cultural values and fostering community education. The digital archive features poetry, literary extracts, music, film clips, visual art, photography, historical documents and oral histories with contemporary plant conservationists and artists – all focused on Kings Park bushland species and their importance to the city’s heritage, identity and wellbeing. It is hoped that FloraCultures, as a virtual repository of vegetal heritage, will offer a precedent for the conservation of Australian bio-cultural diversity – those manifestations of cultural heritage that strongly depend on the continued existence of plants, animals, fungi, rivers, mountains and bioregions as a whole.

The Living Archive: Between Thanatos and Eros

A typical dictionary definition of the word ‘archive’ (as a noun) is ‘a place or collection containing records, documents or other materials of historical interest’ (The Free Dictionary, 2014). However, as scholars of the archive point out, the term has become a ‘loose signifier for a disparate set of concepts’ (Manoff, 2004: 10) – the ambiguous status of the term especially compounded by the introduction of digital technologies and social media approaches to archival practices in the last twenty years. Moreover, as a virtual ‘place’ of both conservation and production – thus concerned simultaneously with the preservation of the past and the construction of the future, in Derrida’s terms – a standard digital archive tends to comprise diverse forms of heritage material in digital format, including texts, images and recordings. For example, the National Library of Australia’s open-access Trove archive – a significant tool for researchers on Australian history, culture and art – contains photos, music, video, maps, diaries, letters and digitised newspapers. Most outstandingly, the NLA archivists have successfully implemented a crowd-sourced approach to historical documents, in which archive users help to transcribe digitised newspaper articles (National Library of Australia, 2014).

Another digital archive of note and arguably one of the first to exist is UbuWeb, founded in 1996 by American poet Kenneth Goldsmith. UbuWeb is a volunteer-based, curated collection of 'avant-garde' artworks, including sound art, visual works, film and poetry (UbuWeb, 2014). Particularly focusing on obscure, out-of-print and limited-run works, the archive is replete with 'the detritus and ephemera of great artists' (Goldsmith, 2011). For example, the Andy Warhol Audio Archive contains audio interviews with the artist from between 1965 and 1987, as well as recordings of contemporary Canadian filmmaker David Cronenberg reflecting on Warhol's evolution as an artist.

But what does it mean for an archive, such as Trove or UbuWeb, to be 'living' rather than simply retrospective, enduring or useful? Is the term 'living' merely a hyperbolic flourish, or can an archive exhibit a peculiarly living form of agency within the larger cultural and ecological systems of which it is part? Indeed, the question of the living archive occupied Jacques Derrida in his treatise *Archive Fever* which posits a Freudian theory of the archive (Derrida and Prenowitz, 1995). Derrida's theorisation of the archive draws largely from Freud's *Beyond the Pleasure Principle* (1961). According to Derrida, there are two opposing forces constituting the economy of the archive. The first is the death or nihilism drive associated with Thanatos, whereas the second is the archival or conservation drive linked to pleasure and Eros. Derrida describes the death drive as 'anarchivic', 'archivolithic' or archive-destroying (Derrida & Prenowitz, 1995, 14). He summarises his Freudian interpretation of the archive in the following passage:

Another economy is thus at work, the transaction between this death drive and the pleasure principle, between Thanatos and Eros, but also between the death drive and this seeming dual opposition of principles, of *arkhai*, for example the reality principle and the pleasure principle (Derrida & Prenowitz, 1995, 14).

The archive, thus, resists the reality of the death drive towards nihilism, entropy and loss. Like the biblical ark, the archive salvages the seeds of the past for the fruition of the future despite the overwhelming archivolithical floodwaters of physical decay, technological obsolescence, cultural obscurity, social disregard and economic penury.

Furthermore, Derrida claims – in terms that recognise its 'living' agency – that the archive itself actively shapes history, memory and the very nature of the archivable. He describes the dynamic interplay between the archive and the archivable as a process of 'archivization' and claims that:

“ ... the technical structure of the *archiving* archive also determines the structure of the *archivable* content even in its very coming into existence and in its relationship to the future. The archivization produces as much as it records the event [*italics in original*] (Derrida & Prenowitz, 1995: 17). ”

In other words, archival meaning is 'codetermined by the structure that archives' (Derrida & Prenowitz, 1995, 18). Derrida's use of the verb 'codetermine' implies a dialectical relationship between the death drive and the conservation drive, between Thanatos and Eros, between mortality and pleasure, between anarchivic decay and the archivic future, or – to borrow philosopher Boris Groys' terms – between non-collected reality (or the Old) and archivable reality (or the New) (Groys, 2012,3). The archive is a liminal space emerging at the threshold of these polarities. In light of such complexities, Derrida proposes the field of 'archivology' as 'a general and interdisciplinary science of the archive' (Derrida & Prenowitz, 1995, 26) – one informed by the expertise of historians, librarians, artists, literary scholars, cultural theorists, heritage advocates and computer programmers.

For Stuart Hall, heterodoxy defines the living archive on all levels. Influenced by the post-Structuralist thinking of Foucault, Hall argues that the living archive is inherently a heterogeneous and dialogic place of intellectual debate, public engagement and social responsibility. The living archive is a 'never-completed project' that is 'on-going, continuing, unfinished, open-ended' (Hall, 2001, 89), continually countering the 'fantasy of completeness' (91). Yet the open-ended archive is not a chaotic construction or fortuitous event, but instead comes to life through an internal cohesion based on a kind of physiology – a set of ordering principles that determines the flow of non-collected reality into and out of the archive-as-system. More than a rote structure or mnemonic mechanism, the archive is first and foremost a 'discursive formation' characterised by a 'heterogeneity of topics and texts, of subjects and themes' (Hall, 2001, 90). The texts composing the living archive are also heterogeneous, including personal stories, narratives, anecdotes, impressions and biographies – in written, visual, aural and mixed-media formats. Echoing Derrida, Hall (2001, 92) goes on to underscore that the living archive is never a static historical collection – concerned merely with the conservation of the past – but is a negotiated space, always in 'active, dialogic relation to the questions which the present puts to the past.'

Moreover, the practice of archiving (the structure and methodology), like the archivable (the content), is similarly diverse and dynamic, shifting between the private and public spheres:

“ It includes those inert collections which have emerged, fortuitously, when odd individuals record or purchase works over time – works which may not be exhibited or accessible to anyone who is trying to do an archaeology of practice. That is the most buried, most inaccessible, most un-recoverable end of the archive. At the other end are the public spaces which have conscious policies of collection and selection, of display and access (Hall, 2001, 91). ”

Most importantly for Hall, the living archive must remain democratically open and accessible, requiring the energy of public involvement to foster ‘vitality of argument, debate and reinterpretation’ (Hall, 2001, 91). The issue of archival access is related to institutional contexts of funding and technology as well as to intellectual questions of aesthetics and interpretation – each factor not an independent strand but rather contingent on the nexus. Despite the intricacies between archival work and its broader social, cultural, economic and ideological contexts, ‘it is extremely important that archives are committed to inclusiveness, since it is impossible to foretell what future practitioners, critics and historians will want to make of it’ (Hall, 2001, 92).

How do Derrida and Hall’s conceptualisations of the living archive play out in the *FloraCultures* project? To begin with, heterogeneity is evident on different levels. The placing of equal importance on Aboriginal (Whadjuck Nyoongar, the first people of Perth), colonial Anglo-European settler and recent immigrant content, foregrounds cultural plurality as an overarching value – *FloraCultures*. Diverse cultures, both pre- and post-colonial, sharing a geographical place over time have produced tangible and intangible ‘artifacts’ (stories, texts, artworks, music) connected to Perth’s indigenous flora. I propose that, through the pilot project, these artefacts in their collectivity come to express the botanical heritage of the city. Again, botanical heritage is more than exclusively a biological or material reality; it is always bio-cultural. Moreover, heterogeneity is visible in the temporality and multi-disciplinarity of the heritage content itself: visual art, textual works, oral histories, mixed-media expressions, from the pre-settlement years of the Swan River Colony (prior to 1829) to the 21st century narratives of conservationists involved with Kings Park’s indigenous vegetation, for example, as educators or propagators. The textual heterogeneity spans historical accounts from the State’s archives in which early naturalists recorded their impressions of Perth’s eucalypts, alongside extracts from recent oral histories in which local people describe the emotional pain of witnessing declines in rare orchid populations after land has been cleared for development and habitat has been permanently lost.

In sum, the interplay between culture, ecology, content and time underlies the project. The archive’s conceptual basis pivots on Hall’s heterodoxy – an essential principle that is enhanced by digital strategies, specifically public participation in the archive through social media (i.e. crowd-sourcing or Facebook-style conversation threads about particular texts). Following Hall’s argument for the value of heterodoxy, I aver that the blend of heritage material contributes to *FloraCultures* as a living archive – not an inert collection of historical or botanical content accessed only by specialist researchers. To borrow again from Hall, *FloraCultures* shuns the ‘fantasy of completeness’ by recognising the value of community-sourced and user-created heritage. The living archive becomes a place of creative production – in the present tense – where forthcoming material is inspired and created from ‘inert collections’, for instance, as artists respond to the archive’s historical facets in designing works about the marginal status of plant species and their environments. What results is a call-and-response between creators and content – the archive as cultural stimulus, the content as a constellation of prompts – in which new manifestations of plant-based cultural (i.e. bio-cultural) heritage are formulated and then installed in the archive according to an open-ended, community-based rhythm that is largely out of the hands of the archivists.

Furthermore, the value of heterodoxy functions on another level –which I will explore more fully later in this paper – but it is essentially ecological in character. Briefly, I will suggest here that the heterogeneity of the archive mirrors the heterogeneity of the plants themselves (i.e. biodiversity) and the different conditions to which they are subjected (both natural and anthropogenic). Bio-cultural heritage conservation becomes more imperative as the living plants (on which the heritage is based) begin to vanish from the urban landscape under the weight of habitat destruction and plant disease. Despite the relevance of his theory of the archive, Derrida overlooks the ecological context out of which the archive and the archivable may arise. As a living archive, *FloraCultures* is always a confluence of multiple realities beyond the archive-archivable dialectic: ecological, cultural, technological, political. Therefore, the struggle between Thanatos and Eros, between mortality and pleasure, which inspires the living archive also imprints the ecological upon the archival.

Digital Narratives: Telling the Stories of Perth’s Plants

The heterodoxy of *FloraCultures* as a living archive results in the possibility of nonlinear narratives, allowing users to track self-generated pathways through the heritage content. The web portal invites user-participants to engage with artworks, literature, historical accounts and oral histories to stimulate their personal memories of plants in relation to their own beliefs, experiences and backgrounds. Once the pilot archive is finished in 2015, it will be possible for users to navigate routes through the heritage material, forging unique plant narratives

through four categories: species names (Nyoongar, common, scientific), genre (literature, poetry, historical writing, art, photography, oral history), media form (texts, visual, audio, video) or time period (pre-colonial, colonial era, contemporary). However, users will also be able to contribute digital material to the archive, thereby enlarging the narrative possibilities of the structure and its content.

Above and beyond the heritage ideals outlined earlier in this paper, FloraCultures endeavours to tell the stories of Perth's plants – through a diverse collection of works – in the belief that no single narrative can be told about the natural world. Just as the cultures underlying the project are plural so too are the stories that emerge; and the stories are intrinsically about the relationships between plants, people and nature in all their complexities rather than isolated species of flora. In this regard, Stuart Hall's 'fantasy of completeness' relates not only to the archive and the archivable but also to the narratives that materialise. Invariably the story of each plant is 'on-going, continuing, unfinished, open-ended' (Hall, 2001, 89), just like the archive itself; each story consists of a multiplicity of stories where new stories are borne out of the fruits of old narratives preserved in historical records. In other words, the genesis of contemporary plant narratives goes hand in hand with the preservation of stories past; to invoke Derrida again, 'the question of the archive is not [...] a question of the past.'

The concept of the living archive – as set out in particular by Derrida and Hall – is closely akin to emerging approaches to digital storytelling through new media. In the context of FloraCultures and other digital projects, such as Rivers of Emotion outlined later in this section, the relationship between the living archive (as the body) and digital storytelling (as the life blood) is an intimate and interdependent one. We know that storytelling is a vital component of oral traditions, found in many cultures of the past and present across the world. Indeed, storytelling is an adaptive practice that has responded over the millennia to available media forms – human speech, rocks, the ground, skin, wood, print-based books, electronic technologies and, later, digital media (Refsland et al., 2007, 411). While the emergence of print-based writing pushed storytelling towards non-interactivity (i.e. reading a book from beginning to end without the possibility of remixing the narrative sequence with one's questions, provocations, interpretations or knowledge), digital technologies are considered to promise more flexible and participatory modes of narrative. For example, the common online technique of hyperlinking encourages users to build specific navigational pathways through digital content, resulting in user-driven narratives not comparable to flipping through the pages of an old-fashioned book or using a work's index to locate material out of the narrative sequence of print.

But what is digital storytelling? Bryan Alexander defines the term simply as 'telling stories with digital technologies' and cites a range of examples, such as a podcast about medieval history, a blog-based or mobile phone novel and a story about trauma told through Facebook and incorporating text, images and video (Alexander, 2011, 3). Digital stories can be fictional and factual, 'brief or epic, wrought from a single medium or sprawling across dozens' (Alexander, 2011, 3). Often community-based, the practice encompasses animation, audio and transmedia combining, for example, film, mobile-place-based components and analogue activities based at a physical location. In slight contrast, Joe Lambert asserts that digital storytelling is not merely a narrative told with a computer or other digital media. It is principally a movement 'dedicated to de-centering authority' (Lambert, 2013, 37).

As a democratic practice, digital storytelling is marked by community engagement and an ethos of personal transformation that promotes the storyteller's agency. As such, it is a vital form of participatory media that can be seen through three lenses: the degree of collaboration between a facilitator and a storyteller; the role of literary voice and style in the narrative; and the form the story takes. Lambert's model of participatory media making is based on the premise – following Henry Jenkins and other scholars – that media consumption is inherently a creative act. His pyramidal scheme posits a taxonomy of participatory forms, beginning with 'constructive consumption (surfing mass media)', 'intermediated consumption (surfing the web)' and 'constructed consumption in context (games, fan films, sampling)' and culminating in the higher degrees of participation he calls 'co-constructed (artist-led media projects)', 'facilitated (digital storytelling and photo narratives)' and 'do it yourself' which appears to be a highly independent hybrid category (Lambert, 2013, 39). For Lambert, digital storytelling entails collaboration between a facilitator and the storyteller. In similar terms, other new media scholars argue that digital stories 'radically alter the familiar triad of author-text-reader and in the process produce new kinds of narrative. In the digital realm, authorship is dispersed, collaborative and unstable' (Friedlander, 2008, 179).

The nonlinear narratives of some digital storytelling projects give users access to events previously inconceivable and unimaginable. An example of environmentally focused digital storytelling project is Mannahatta, which offers a glimpse into New York's now heavily urbanised Manhattan Island in the early 1600s as the island was when European explorers first charted the Hudson River (Sanderson, 2009). Based on extensive research into the island's ecology and the activities of Native American communities, such as setting fire to habitats to promote the abundance of desirable animals and plants, Mannahatta allows users to 'peel back' the layers of New York's contemporary cosmopolitan identity to tell the stories of the city's original flora, fauna, landforms, wetlands and human inhabitants.

Scholars of digital storytelling argue that projects such as Mannahatta are based on a 'decentralised vision of virtual heritage' in which a multitude of voices (human and nonhuman) come together to tell different stories *in* and *about* a shared place (Refsland et al., 2007, 413). Although Mannahatta lacks a strong user-based ontology, the project excels in bridging multiple time scales, both geological and cultural, entailing different human interactions with the original New York landscape. However, the assertion that 'virtual heritage could greatly improve its efficacy by developing user-centered and dynamic systems for nonlinear storytelling' (Refsland et al., 2007: 415) is better actualised in and more central to the aims of the Rivers of Emotion project, focusing on a crowd-sourced approach to the cultural value of the rivers of the Perth region.

Rivers of Emotion offers a noteworthy model of a user-centric space for nonlinear storytelling through the interplay of textual, visual and aural material. It also provides an exemplar of interactivity for the trajectory of the FloraCultures pilot archive. Rivers of Emotion is 'an emotional history of the Derbarl Yerrigan and Djarlgarro Beelier/ the Swan and Canning Rivers' of the Perth region (Rivers of Emotion, 2012). The web portal is structured into the categories 'Riverscenes', 'Riversights', 'Riversounds' and 'Riverstories' and is designed to make possible the public exchange of experiences, feelings and memories about these two major Perth rivers and the aquatic systems of which they are part. Similar to the FloraCultures pilot archive, the project's focus is multi-sensorial, featuring oral and written content of 'soundscapes, landscapes, visual, aural and emotionscapes' (Rivers of Emotion, 2012). For example, within 'Riverscenes', an entry from a contributor named 'G. Pickering' from 19 January 2013 revolves around an image of a jellyfish accompanied by the caption 'the light dances as the jellyfish journey through my frame...mesmerising, meditative, illuminated, illuminating – they move me.' Emotional and artistic responses to nature are valued, fostered and preserved in digital format. Moreover, 'Riversounds' includes recordings of the memories of local residents. Stan Parks speaks of swimming in the Swan River as a boy growing up in North Fremantle in the 1950s (Rivers of Emotion, 2012). In complement to the extensive ethnographic information, the project also includes archival images of the rivers, such as digitised versions of key paintings from the Swan River Colony era circa 1829 and later.

As a means to promote community engagement *with* and deeper appreciation *of* Perth's flora, the FloraCultures archive will employ interactive digital storytelling approaches in an attempt to convey – and to elicit from the public – the multiple stories of each of the 48 species featured in the pilot project. As suggested previously, the digital story is a heterogeneous one – invoking again Hall's notion of heterodoxy – based on an extensive historical record and comprising the scientific accounts of professional botanists and skilled experts (recorded as interviews transcribed to a written form but also available as streaming audio and video data), alongside the narratives of community activists, botanical educators and wildflower enthusiasts – both long-term residents and short-term visitors to the State. In the vein of Rivers of Emotion, users of FloraCultures will be able to contribute their comments, impressions and memories – as well as any plant-based heritage content (i.e. photos, diaries, recordings or ephemera) – directly to the archive, enlarging the bounds of the collective story told by the community, past and present. User-generated content in the form of memories and other plant narratives can be either provoked by existing material (e.g. someone remembers a story told by their grandparents after viewing a painting in the archive) or created in response to existing content (e.g. someone writes a short story about a plant species puzzled over by Swan River Colony settlers and then contributes the work to the archive). I believe that the crowdsourcing of plant-based heritage material is a core feature of nonlinear storytelling in digital environments in which traditional and relatively static archival material (texts, images, recordings) intermixes with dynamic new media based expressions of heritage.

Case Study: The Digital Heritage of the Sheoak

In order to demonstrate the spectrum of content of concern to the FloraCultures heritage methodology, I offer a brief example of the western sheoak (*Allocasuarina fraseriana*) – a common species in the Kings Park bushland and an endemic Western Australian plant with an extensive cultural history. As paintings, poems and commentaries, these cultural resonances are not wholly related to the digital (i.e. they have had a long analogue existence before being digitised); nevertheless they demonstrate the movement between digital and traditional print-based materials that is at the core of the project. The process of uncovering the sheoak narrative(s) begins by tracing the intriguing etymological roots of its scientific, common and Aboriginal names. The genus *Allocasuarina* combines the Greek root *allos* for 'other' and its former genus name, *Casuarina*, which derives from the Latin *casuarius* for 'cassowary' from the likeness of the tree's branches to the bird's feathers.

As its Latinate genus suggests, sheoak is 'another kind of casuarina', one of many casuarinas across Australia. Interestingly, since the western sheoak was renamed *Allocasuarina*, the former denomination 'casuarina' is more generally used now as a preferred common name by field naturalists instead of 'sheoak' – an example of the fluidity between categories and practices of naming the natural world over time. The species name *fraseriana* honours colonial botanist Charles Fraser (1788-1831) – the first head of Sydney Botanical Gardens and one of the 'fathers' of Australian botany. In Nyoongar terms, sheoak is called *gulli* or *kwela* (Moore, 1978: 31, 46). *Kwel* in Nyoongar means 'name', so sheoak is regarded by Nyoongar elders as the tree of naming – a plant that holds the names of everything and everyone, living and deceased, animate and inanimate, and that utters those names through its 'whispers' (Noel Nannup, pers. comm., 12 January 2014).

Sheoak's name, aural environment and timber are also the subjects of many disparate yet overlapping stories throughout Western Australian colonial history. For instance, in the late 1800s, Western Australian settler Janet Millett wrote of its signature sound known as 'sheoak whispers':

“ ... a few weird she-oaks destitute of leaves, between whose fine countless twigs, doing duty for foliage, the air sighs in passing with the sound as of a distant railway train (Millett, 1980). ”

Other Australian writers, such as the 19th century poet Charles Harpur, also observed the phenomenon of sheoak whispers, although often in more melancholic terms than Millett. As another part of the naming story, sheoak gained part of its common name from the similarity of its grain to its English namesake: the oak. Indeed, the origin of the prefix 'she' has been the subject of speculation amongst foresters and botanists, offering another controversy related to plant naming (Ryan, 2012).

No matter its nomenclatural derivation, sheoaks across Australia certainly would have reminded early Anglo-European settlers of the treasured native oaks back home: a durable and craftable timber. However, like many of Australia's gum trees, the sheoak could have been considered inferior to its northern counterparts. Sheoak was used in settlement years for shingles and yokes, but, since the early 20th century, the wood has been prized for crafts, cabinets and furniture. For example, an article in *The West Australian* (1933) discusses a 'presidential chair' constructed of sheoak and presented as a gift to the Pharmaceutical Society of Great Britain (The West Australian, 1933). One-hundred years prior to the presidential chair, on 12 August 1829 the Foundation of Perth ceremony took place during which Helen Dance, the wife of Captain Dance of the HMAS Sulfur, cut down a symbolic sheoak near the present site of the Perth Town Hall. This momentous chopping of the tree is depicted in George Pitt Morrison's painting 'The Foundation of Perth' (1929):



Figure 1. 'The Foundation of Perth' (1929), George Pitt Morrison. Retrieved from <http://collection.artgallery.wa.gov.au/search.do?id=1737&db=object&page=1&view=detail>

As these different short examples indicate, the sheoak has a rich Nyoongar and colonial cultural history. However, the casuarina has also been a fascination of Western Australian poets writing today. For example, John Mateer's poem 'Casuarina, the Word' offers a nuanced reinterpretation of the age-old sheoak whispers and the likening of its foliage to a cassowary's feathers, worth quoting in full:

“ The word is a gaol, a plot of land, a tree
and a cassowary. When we heard,
we didn't name that sound
as a cry, a call or a song.
Maybe a cow, a fox, a devil
or a cassowary? Not an emu in the guise
of a sizzling tree, nor Macassan
eyes mistaking the she-oak's feathered
branches for the wings of a cassowary.

(Mateer, 2010: 68)

”

Poetry, such as Mateer's – along with cultural and historical content from different time periods, as cited earlier in this section – can serve as prompts within the digital heritage archive, stimulating the creation of new images, writings and recordings from users in relation to a plant species, its sensorial environment, cultural interpretation and ecological value. Intriguing themes within the broader story – exemplified by sheoak whispers – demonstrate how archival content might prompt future cultural production (e.g. artwork in response to the theme), which can then returned to the archive in a reflexive cycle of botanical heritage creation and public appreciation into the future.

Conclusion: Towards an Ecology of the Archive

This paper has focused on the interconnections between virtual and vegetal heritage through the example of the FloraCultures archive. Derrida's Freudian analysis of the archive at the cusp of the struggle between Thanatos and Eros and Hall's privileging of heterodoxy and incompleteness collectively seem to posit a theory of the living archive. I have suggested that digital storytelling is a core principle and practice of any archive deemed to be 'living' in which there is a blurring of the distinction between the traditional archive (as relatively static, fixed and material) and new media based archives (as potentially more participatory, open-ended, and indeterminate). The archive as a 'loose signifier for a disparate set of concepts' (Manoff, 2004, 10) is increasingly the reality in the digital era as emerging (and emerged) technologies – especially the participatory legacies of Web 2.0 – rapidly transform archival philosophies and practices (Refsland et al., 2007, 409). Projects such as FloraCultures and Rivers of Emotions suggest that the archive of new media provenance is a heterogeneous space in-becoming – one which challenges pre-existing concepts of what an archive should resemble. The brief example of the sheoak demonstrates the range of content to be included in FloraCultures and how extant material can invigorate the aims of botanical conservation and artistic creation.

But what precisely makes FloraCultures different from other multimedia archives, such as Trove, UbuWeb and Rivers of Emotion? If we accept that all archives are 'living' – a notion applied somewhat uncritically and sweepingly by both Derrida and Hall – then how is FloraCultures unique? I suggest that the diachronic and dialogic qualities of the project – as well as its medial heterodoxy – distinguish FloraCultures as the first archive of its kind to attempt to engage seriously with the lives of plants. In comparison, other related botanical heritage archives are narrowly focused on specific aspects of the botanical world – usually utilitarian in emphasis. For example, the University of Michigan's Native American Ethnobotany database allows online users to research the ethno-botanical aspects of North American plants as food, fibre and medicine (University of Michigan, 2014). However, the repository disregards the significance of those plants to the art, literature and cultural identities of Indigenous peoples, Anglo-European colonists and contemporary American societies.

Similarly, Kew's web resource Useful Plants and Fungi (formerly called Plant Cultures) focuses on the ethno-botanical importance of a range of plants as building materials, fibres, dyes, food, drink, fuel and medicine (Kew Royal Botanic Gardens, 2014). While the website underscores the inextricability of flora and human cultures globally, the master narrative that results is one of anthropocentric exploitation that marginalises the agency of plants. Furthermore, these two repositories of heritage content offer the community no means to engage, participate or contribute – thus constraining the possibility that botanical heritage is constituted in the past, present and future by specialists, scientists, artists, writers and the public alike. In other words, what these botanical heritage archives lack is an *ecology* of archival practice – a digital ecology that Derrida and Hall fail to articulate in their accounts of the archive.

Rather than an archive as an *economy* (a mechanistic, fiduciary metaphor) or a *living* thing (a biological, material figuration), in Derrida and Hall's terms, I prefer to conceptualise the archive as an *ecology* – a dynamic and interdependent 'system' of animate and inanimate actants. If we accept that a natural heritage archive (or any archive for that matter) will never actually be a living thing but rather a referent for living things, then what is the use of this trope that risks diminishing the agency of real organic beings, such as plants? Nevertheless, it is productive to recognise that the agency of the archive depends on the agency of networks of past, present and

future user-contributors and the plants themselves. These networks are given shape by the form of the digital archive, the heritage content that becomes archivable and the changing ecological and cultural contexts which yield bio-cultural heritage in the first place. Between the archive and archivable – between entropy and conservation – is an ecological flux that makes a project such as FloraCultures an open-ended, ever-changing and vastly interconnected system. The archival relationship between the virtual and vegetal is, therefore, determined by the environmental dialectic between Eros and Thanatos in urban Perth. In simpler terms, botanical heritage becomes ever-more jeopardised when healthy plant communities no longer exist in proximity to people, especially in terms of intangible cultural heritage (ICH) such as memories, impressions and stories.

FloraCultures as an ecology recognises that the decline of indigenous plants in everyday life in Perth or the conservation of those plants through the sustained efforts of human communities impacts the composition of the archive. Again invoking Derrida, the archive is the dialectic between the drive towards pleasure (Eros, conservation) and the drive towards entropy (Thanatos, destruction). The FloraCultures archive, thus, addresses the pathos of species loss in the urban environment of Perth through the digital conservation of botanical heritage (rather than through other means, such as field-based conservation). It should be stressed that the material referents for digital botanical heritage are always the living plants themselves, a codetermination between archive-archivable-ecology in which 'ecology' is both natural and cultural (involving the complex relationships between plants, people and the natural world over time).

This position should not be read as a form of 'digital logocentrism' in which the user interactivity, medial heterodoxy and diachronic flux of the digital archive supersede the relative fixity of the analogue archive. Instead, the digital archive as a participatory ecology – rather than an economy or living thing – brings into dialogue (but does not conflate) the ecological focus of the archive and the networks of living and non-living actants (plants, environments, people, digital technologies, digital and analogue or print-based artefacts) upon which the archive is built. Subsequent research into FloraCultures and other botanical archives should focus on how the media technologies of archiving set, modify or legitimate forms of environmental memorialisation.

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