PART 1

Australia and the Global Dialogue in 2012

Beautiful One Day: Assessing the World Heritage aesthetic values of the Great Barrier Reef

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Abstract

The Great Barrier Reef is an iconic Australian place. While its aesthetic qualities are hardly in dispute, neither the World Heritage Listing nor previous research offered an adequate framework for the definition and management of its aesthetic values. This article discusses the first part of a project designed to address this need in relation to the Outstanding Universal Value of the Reef. The article first examines the assessment of aesthetic values in ‘natural’ landscapes through the World Heritage system, and then moves on to shape an approach for the Great Barrier Reef.

The Reef is not a single entity but experienced as many places through distinct lenses, from being immersed underwater and intimately connecting with marine life, to flying above and witnessing the panorama of patterns of reefs, water and islands. By using experiential lenses to frame our investigation of the aesthetic values and to identify their attributes we avoided a focus on well-known geographic locations and the privileging of visual qualities, and maintained a conceptual focus on the Reef as a whole.

The outcomes of the project demonstrate that a rigorous approach to defining aesthetic values and their attributes in large ‘natural’ landscapes is possible and necessary for the management of these values independently of other scientific values. This is of particular relevance for the World Heritage system where the identification and evaluation of aesthetic values continues to be dominated by the rhetorical language of visual description and limited to the attributes of ‘natural’ values.

Introduction

Following concerns about the potential impacts of proposed developments on the World Heritage values of the Great Barrier Reef raised during the 2011 meeting of the World Heritage Committee, a joint IUCN/UNESCO monitoring mission in 2012 identified the need for the Outstanding Universal Value of the property to be established as a ‘clearly defined and central element within the protection and management system’ (UNESCO & IUCN 2012:8; Day 2012:121). The report noted that the aesthetic values of the property are less well understood than other aspects of the property and that ‘further work is needed in relation to identifying and documenting the attributes related to the aesthetic values of the property’ (UNESCO & IUCN 2012:36).

In response, as part of the current Strategic Assessment of the Great Barrier Reef World Heritage Area (hereafter ‘Great Barrier Reef’) under the Environment Protection and Biodiversity Conservation Act (1999), the Australian Government commissioned Context Pty Ltd undertake a desktop study over a period of 6 months to first identify the attributes of the aesthetic values of the Great Barrier Reef as defined by the 2012 Retrospective Statement of Outstanding
Universal Value for the Great Barrier Reef (hereafter ‘the Statement’) and where possible map these attributes; and second to consider the sensitivity of these attributes in relation to the potential impact of fourteen broadly defined activities, such as port development, marine tourism or agriculture.

The project was to be undertaken in close cooperation with the Australian Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC now the Department of the Environment) and the Great Barrier Reef Marine Park Authority (GBRMPA). The project team was Chris Johnston, Dr Anita Smith and John Dyke. The full project report is now publicly available and is listed in References below.

In this paper we discuss the first part of the project, the development and application of a methodology for identifying and mapping the attributes of aesthetic values of Outstanding Universal Value of the Great Barrier Reef. The implications of this for the assessment and management of aesthetic values in ‘natural’ landscapes in the World Heritage system and for other aesthetic values of the GBR are then considered. The second project component, a sensitivity and impact assessment methodology is not addressed here.

**Background**

The Great Barrier Reef was inscribed on the World Heritage List in 1981 as a natural property under World Heritage Criteria vii, viii, ix and x (known in 1981 as Natural Criteria i – iv). The aesthetic values of the Reef were recognised as being of World Heritage significance by inscription of the property under Criterion vii. At that time, and until 2010, it was the largest property on the World Heritage List, extending over 2000km along the continental shelf of northeast Australia from Cape York to Fraser Island and covering an area of over 348 000 km².

Like other World Heritage nominations of the time, the nomination dossier for the Great Barrier Reef was limited in description and analysis and did not detail or argue the significance of the aesthetic values of the property. There was no requirement to define the specific values or their attributes that underpinned the argument for the property being of Outstanding Universal Value. The key aesthetic descriptor in the dossier was that the ‘Great Barrier Reef provides some of the most spectacular scenery on earth and is of exceptional natural beauty’ (Australian Government 1980).

Since 1981 research into the scientific values of the Reef has created a vast body of data on the biodiversity and ecology of the reef and this has underpinned the development of a complex management and use zoning for the Great Barrier Reef (Great Barrier Reef Marine Park Authority n.d.). There has not been an equivalent research effort in relation to the aesthetic values or their attributes. In 1997 a major review of the Outstanding Universal Value of the Great Barrier Reef set out to expand and clarify the values and attributes ‘upon which the Great Barrier Reef Region is justified as a natural heritage property for inscription upon the World Heritage List’ and thereby guide effective management (Lucas 1997: viii). In relation to aesthetic values the review found that knowledge about the aesthetic attributes of the Reef was ‘poor’, and noted a ‘lack of methodologies’ and a ‘limited understanding of what constitutes aesthetic value’
as the key problem (Lucas et al 1997: x). The report recommended a new research program to address the aesthetic values of the natural heritage attributes of the Reef so as to better incorporate them into Reef planning and management (Lucas et al 1992: xii).

From the early 2000s research including several projects arising out of the work of Greer et al (2000) responded to this need and generated an extensive body of data and insights connecting the scientific understanding of the Reef with historic and current tourist perceptions of the reef landscape (Pocock 2006, 2005); the diversity and in particular the non-visual aesthetic experience of places and elements of the landscape and how their appreciation has changed over time (Bowen & Bowen 2002; Love 2000; Pocock 2002, 2008); and local community attachments and meanings of Great Barrier Reef (McIntyre-Tamwoy 2004; Harrington 2004). This research was valuable for its potential to inform broad-based assessment and management of the aesthetic values of the Great Barrier Reef but did not specifically clarify or investigate the aesthetic values for which the property was inscribed on the World Heritage List, that is, those of Outstanding Universal Value. As is discussed later in this paper, the outcomes of this research offer a major resource for future work in this regard.

Revisions to the Operational Guidelines to the World Heritage Convention (UNESCO [2005] 2011) in 2005 required for the first time that properties inscribed on the World Heritage List have a Statement of Outstanding Universal Value detailing the values and attributes against each Criterion under which they are inscribed, along with the integrity, state of conservation and management and protection of the property. For those properties inscribed prior to 2005 this has required development of a retrospective Statement with the same content. The Statement for the Great Barrier Reef (along with those for eight other Australia properties) was approved by the World Heritage Committee in 2012 (UNESCO 2012a), and provides the first systematic description of aesthetic values of the Great Barrier Reef under Criterion vii:

The GBR is of superlative natural beauty above and below the water, and provides some of the most spectacular scenery on earth. It is one of a few living structures visible from space, appearing as a complex string of reefal structures along Australia’s northeast coast.

From the air, the vast mosaic patterns of reefs, islands and coral cays produce an unparalleled aerial panorama of seascapes comprising diverse shapes and sizes. The Whitsunday Islands provide a magnificent vista of green vegetated islands and spectacular sandy beaches spread over azure waters. This contrasts with the vast mangrove forests in Hinchinbrook Channel, and the rugged vegetated mountains and lush rainforest gullies that are periodically cloud-covered on Hinchinbrook Island.

On many of the cays there are spectacular and globally important breeding colonies of seabirds and marine turtles, and Raine Island is the world’s largest green turtle breeding area. On some continental islands, large aggregations of over-wintering butterflies periodically occur.

Beneath the ocean surface, there is an abundance and diversity of shapes, sizes and colours; for example, spectacular coral assemblages of hard and soft corals, and thousands of species of reef fish provide a myriad of brilliant colours, shapes and sizes. The internationally renowned Cod Hole near Lizard Island is one of many significant tourist attractions. Other superlative natural phenomena include the annual coral spawning, migrating whales, nesting turtles, and significant spawning aggregations of many fish species (Australian Government 2012).

This description of aesthetic values in the Statement for the Great Barrier Reef framed our project. Our goal was a methodology appropriate to investigating these values, documenting and mapping their attributes, and assessing their sensitivity to impact in the context of the management of the World Heritage property. Our method needed to be cognisant of other approaches to aesthetic value assessment and the systems in place to manage heritage values through GBRMPA. And there was the challenge of the Great Barrier Reef itself – its enormous scale and the diversity of its seascapes, landscapes and ecosystems.
Aesthetic Values in the World Heritage System

Properties are inscribed on the World Heritage List under one or more of ten World Heritage Criteria. Four are natural Criteria (vii – x), that is, they reflect the Outstanding Universal Value of natural properties while the remaining six Criteria (i – vi) are applied to cultural properties. The aesthetic values of natural properties such as the Great Barrier Reef are recognised under Criterion vii: containing superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance (UNESCO 2011; Paragraph 77).

Two distinct concepts or kinds of values are expressed in this Criterion – ‘superlative natural phenomena’ and ‘exceptional natural beauty and aesthetic importance’. The Statement for the Great Barrier Reef illustrates the way in which each of these two concepts can be expressed: the ‘spectacular and globally important breeding colonies of seabirds and marine turtles’ expresses a superlative natural phenomenon and the ‘magnificent vista of green vegetated islands and spectacular sandy beaches spread over azure waters’ describes exceptional natural beauty and aesthetic importance (Australian Government 2012).

‘Superlative natural phenomenon’ refers to a biological event or a unique or outstanding natural feature that can be objectively measured and assessed (e.g. deepest canyon, highest mountain, largest cave system, highest waterfall, etc). By comparison, approaches to the assessment of ‘exceptional natural beauty and aesthetic importance’ are poorly defined.

A major international study by IUCN in 2012 for the first time examined the use of Criterion vii so as to guide its future application and evaluation (Mitchell 2013: 1). This study, undertaken in parallel with our project, and highlighted that the assessment of ‘superlative natural phenomena’ using quantitative measures is relatively well recognised in the World Heritage system but the assessment of ‘exceptional natural beauty and aesthetic importance’ is far less well understood, commonly qualitative and often considered subjective and lacking in a systematic and transparent method (Mitchell 2013).

That ‘exceptional natural beauty and aesthetic importance’ lacks a recognised and systematic assessment method within the World Heritage system was also confirmed through our review of 23 World Heritage properties that have been inscribed under Criterion vii since 2003. Although a total of 131 properties are inscribed under Criterion vii, only those inscribed since 2003 have a detailed Statement of Outstanding Universal Value defining the aesthetic values agreed by the World Heritage Committee to be of Outstanding Universal Value. Of these 23 properties, three were inscribed on Criterion vii alone, six are marine sites or have a substantial marine component and the remainder are terrestrial properties. We examined the nomination dossier (where available), the IUCN evaluation report and any further information available on the World Heritage Centre website.

Our analysis revealed that the Statement of Outstanding Universal Value for these properties rarely distinguished between ‘superlative natural phenomena’ and ‘natural beauty or aesthetic importance’. In most cases, the value described against Criterion vii is a ‘superlative natural phenomena’, justified through a quantitative measure. For example, Monarch Butterfly Biosphere Reserve (Mexico) describes the overwintering concentration of the monarch butterfly in the property ‘as the most dramatic manifestation of the phenomenon of insect migration… an estimated 70% of the total overwintering population of the monarch butterfly’s eastern population’. Where ‘exceptional natural beauty or aesthetic importance’ is claimed, values are framed in terms of scenic beauty. The justification in almost all cases relies on the rhetorical power of the descriptive text rather than any systematic analysis or comparative data. An example is the description of the Rock Islands Southern Lagoon (Palau) as ‘The maze of dome-shaped and green Rock Islands seemingly floating in the turquoise lagoon surrounded by coral reef is of exceptional aesthetic beauty’ (UNESCO 2012b).

An almost exclusive focus on visual attributes was evident for almost all 23 properties while other sensory experiences are not described. In only one property, the Ilulissat Icefjord (Denmark) did the aesthetic values explicitly move beyond the visual to encompass other senses, in this instance the dramatic sounds produced by the moving ice are described in the Statement of OUV as a ‘memorable natural spectacle’. An over-reliance on the visual was noted by IUCN as
far back as 2006, arguing that aesthetics is ‘a personal and emotionally based response… not just visual but including a range of senses and associative responses’ (IUCN 2006: 9).

Further to demonstrating an over emphasis on visual perception, our review also confirmed that values expressed under Criterion vii almost always describe the visual aesthetic qualities of the attributes associated with values of the property recognised under the other natural criteria. In other words, aesthetic values that have attributes unrelated to those argued against Criterion viii, ix or x are never considered as being of Outstanding Universal Value. The values expressed under Criterion vii in the Statement for the Great Barrier Reef follow this pattern and almost exclusively emphasise the visual attributes of aesthetic values.

Our review and the concurrent IUCN study (2013: 32) both found that properties inscribed for their exceptional natural beauty and aesthetic importance are usually spectacular landscapes or seascapes, with their aesthetic values associated with a high number or density of features or natural elements. The Statement for the Great Barrier Reef describes the aesthetics arising from the juxtaposition or concentration of natural elements at specific locations such as the Whitsunday Islands as attributes of Outstanding Universal Value. Similar juxtapositions or patterns of natural elements are likely to be found throughout the Great Barrier Reef, but this is not specifically recognised. The Statement also emphasises the number of and variety in the colours and shapes of coral and fish as part of aesthetic value. In both instances, the justification of Outstanding Universal Value relies on the descriptive language but doesn’t adequately define the attributes of aesthetic value in a way that could provide a firm basis for management.

Our review clearly demonstrated that appreciation and recognition of aesthetic qualities in the World Heritage system is currently limited to visual qualities and dominated by the scientific values for which the property is considered to be of Outstanding Universal Value. The Statement for the Great Barrier Reef follows this pattern. While it was not within the scope of our project to investigate aesthetic values of the Great Barrier Reef beyond those described in the Statement, the findings of our review informed the development of our methodology. The review highlighted the need to elaborate these values using evidence unrelated to the scientific description of the environment in order to identify the full range of attributes of the aesthetic values and to move beyond a fixed and subjective understanding of visual aesthetics to one informed by how people experience a place.

**Australian Frameworks for Aesthetic Values Assessment**

Aesthetic value has long been problematic in heritage assessment. The formalised aesthetic frameworks of art theory and architecture were engaged in the earliest period of heritage listings where the focus was on buildings as representatives of design styles and periods. With the expanding scope of heritage, analysing the aesthetic qualities of landscapes initially adopted scenic and visual quality methods established in the 1970s to aid land use and land management decision-making, particular on contentious activities such as timber harvesting or the siting of major power transmission lines (USDA Forest Service 1973; Forests Commission Victoria 1983). These approaches focused on the ‘seen landscape’, applying visual quality indicators developed through perception studies designed to define the preferred visual characteristics of landscapes. Criticism of such approaches emerged quickly, especially when used to assess the aesthetic values of landscapes nominated for heritage listing (Fabos & Mcgregor 1979). In Australia the criteria for the first national heritage register – the Register of the National Estate in 1975 – included ‘importance in exhibiting particular aesthetic characteristics valued by a community or cultural group’. The meaning of ‘particular’ aesthetic characteristics and who values them remained to be understood. Instead of judging aesthetics against ideals such as beauty, picturesqueness or sublimeness or the formalities of architectural style, this criterion required consideration of community perceptions.

In 1988, the Australia ICOMOS Guidelines to the Burra Charter: Cultural Significance went a step further in recognising aesthetic values as connected to sensory engagement with and response to a place:
Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria may include consideration of the form, scale, colour, texture and material of the fabric; the smells and sounds associated with the place and its use (Australia ICOMOS 1988: 42).

While this definition was useful for the assessment of cultural heritage places, further elaboration of the nature of aesthetic values was needed to respond to the scale and complexity of a national assessment of the natural and cultural heritage values of Australia’s forests, initiated by the Commonwealth, State and Territory governments in 1992. As a result, aesthetic value became redefined as:

… the response derived from the experience of the environment or particular natural and cultural attributes within it. This response can be to either visual or non-visual elements and can embrace emotional response, sense of place, sound, smell and any other factors that have a strong impact on human thought, feelings and attitudes (Ramsay 1992: 70).

This definition represented a significant shift in thinking, no longer privileging ‘visual’ as the primary sensory response to place, it reflected a broader understanding of aesthetics as an emotional and sensory response to place (Ramsay & Paraskevopoulos 1994) and shifted the emphasis to the experience of place. This required new types of data. In response, workshops were held across the ten forested regions with local communities and with forest ‘experts’ such as foresters and rangers, each designed to explore their aesthetic perceptions. Artistic expressions (paintings, photographs, music and performance) and tourism images were analysed, recognising also that they may both reflect and influence community aesthetic appreciation. Analysis methods shifted from examination of the landscape to examination of perceptions.

When the National Heritage List was established in 2004 under the Australian Environment Protection and Biodiversity Conservation Act 1999, the Australian Heritage Commission (AHC) developed the concept of ‘inspirational landscapes’ as part of a national thematic framework to guide the development of the National Heritage List; it elaborated some of the concepts developed through the Regional Forest Agreement assessments. ‘Inspirational landscapes’ were defined as:

places that inspire emotional, spiritual and/or intellectual responses or actions because of their physical and experiential qualities as well as their meanings, associations, stories and history (Context 2003: 15).

Through these national initiatives, a robust methodology for understanding aesthetic values has emerged in Australian practice and been applied to a diversity of National Heritage List nominations for large-scale natural and cultural landscapes such as the City of Broken Hill, the Tarkine and the Kimberley.

Turning to the Great Barrier Reef, it is important to recognise that similar approaches were being developed and applied there especially in research initiated through James Cook University in the early 2000s (Greer et al 2000; Harrington 2003, 2004; Pocock 2002, 2003, 2005, 2006; McIntyre-Tamwoy 2004). This research offered valuable insights into the nature of the Great Barrier Reef and the diversity of sensory experiences available, contributed data in the analysis phase of our work, and helped further frame our thinking in developing a framework that encompassed both physical and experiential attributes of aesthetic values and to apply it to the largely visual aesthetics contained in the Statement.

**Assessing the Aesthetic Values of the Great Barrier Reef**

**Factors that shaped our methodology**

The focus of the GBRMPA has long been on understanding and protecting the biological values of the Great Barrier Reef, seeing these as underpinning its Outstanding Universal Value. This, coupled with the lack of a systematic methodology for assessing aesthetic values within the World Heritage system and the encouragement offered by the Operational Guidelines to apply
a ‘rigorous approach’ invited a more expansive appreciation of the ‘natural beauty and aesthetic importance’ of the Great Barrier Reef to frame identification and mapping of these values.

A further challenge in developing a methodology that could be integrated into the GBRMPA’s management and monitoring systems is the enormous scale and the diversity of the seascapes, landscapes and ecosystems of the Great Barrier Reef. The method needed to be applicable at a variety of geographical scales from the Reef as a whole to specific localities in order to link the assessment of values to the consideration of impacts on those values.

Along with the work of Greer, Harrington, Pocock and others in defining aesthetic values of the Reef, there had also been several studies of the visual or scenic resources of the Queensland coast and continental islands, although not the Reef itself (Brower et al 1994; EDAW 1996). Both were broadly-based landscape characterisation studies, using the physical attributes of landform, water form and land use to define areas of distinctive ‘character’ and then assigning a scenic quality rating to each area. Such studies are typically dominated by visual contrast and while based on perception studies, they offer a narrow perspective and do not address the sensory and affective experience of place. Pocock (2003) on the other hand, offered a far broader framing, engaging with the sensuous qualities of the Reef and their role in constructing an understanding of place for visitors – the feel of the water, the sounds of the wind, the texture of sand and even the tastes and smells of reef experiences.

In developing our methodology we needed to consider the nature of the Reef itself and the ways it is experienced while at the same time being mindful of the limits placed on exploring these considerations by our focus on the aesthetic values described in the Statement. The vast scale, diversity and complexity of the land and marine forms of the Great Barrier Reef were fundamental considerations. The Reef stretches from the remote tropical northern tip of Australia down through the clusters of continental islands to southern Queensland; it offers a wealth of experiences and reflects a long history of engagement. It is a dynamic and ever-changing landscape, alive and responsive to climate, weather and human actions. It is a place reflecting layers of natural and cultural values, and it has a long Indigenous history and active contemporary connections.

As we observed in analysing other World Heritage properties, marine environments can be experienced at a variety of scales – from an intimate underwater encounter with colourful fish and corals, to the vast panorama of cays and islands visible from the air. To encompass these scales and the experiential opportunities each offers, we defined three distinct lenses through which people experience the Reef – underwater, at water level and panoramic. We also recognised how technology has changed the opportunities to experience the Reef;
for example, flights over the Reef are now readily available and underwater cameras easily capture intimate portraits of fish.

Recognising that aesthetic response to a place is linked to both the characteristics of the environment and to culturally or personally derived preferences, we considered that the traditional definition of attributes as material or physical expressions of value was too limiting. Considering our adopted definition of aesthetic values, we described two distinct types of attributes: environmental and experiential.

To define environmental attributes, we used a typology of marine and coastal ecosystems established by GBRMPA (2012a, 2012b). Then we defined the qualities of each environmental attribute that enhance its aesthetic value, and the lens through which these qualities are apparent. For example, the qualities that enhance the aesthetic value of the environmental attribute ‘water’ include its clarity, calmness, the intensity of its colour and the intensity of sunlight transmitted through or reflected on the water. From the data available on the Great Barrier Reef, we concluded that these qualities were perceived through all three lenses – panoramic, water-level and below water.

Experiential attributes were based on selected studies of human perceptions and preferences (Clark & Stankey 1979; Swanwick et al 2002; The Research Box et al 2009; Sherl et al 1997; Ormsby et al 2004) and a workshop with GBRMPA. The conditions under which an environment is experienced will also influence perceptions and therefore aesthetic appreciation. Because the aesthetic values in the Statement are closely linked to the natural values of the Great Barrier Reef, we recognised that these conditions would also be linked to the experience of the environmental attributes, and sought to identify factors that would influence the positive or negative expressions of each experiential attribute. For example, discordant and intrusive sights, sounds and smells will influence the experience of tranquility by their presence or absence. The qualities that enhance the aesthetic value of each experiential attribute and the relevant lenses were then defined. For example, sensory immersion in nature – in its sights, sounds, smells and ambience; stillness and reflective qualities; and intimacy were the three qualities we identified as being associated with tranquility. Seven distinct experiential attributes were defined from our research: beauty; naturalness, tranquillity, solitude, remoteness, discovery, and inspirational.

The aesthetic qualities associated with both types of attributes were derived from the evidence of aesthetic values examined for the Reef. This is discussed below.

Figure 3: The water level lens: North West Reef Island. (Source: Commonwealth of Australia (GBRMPA)
Defining and mapping environmental and experiential attributes

To understand the aesthetic values attributed to the Great Barrier Reef we examined three broad categories of data:

- direct expressions of aesthetic value: we focused on images and videos taken and posted on-line by individuals (including professional photographers)
- research that reported on the values, perceptions, expectations and satisfiers for visitors to the Reef, for local Reef communities and for Reef ‘experts’ such as scientists who study the Reef
- mediated expressions of aesthetic values evident in tourist posters, promotional materials and websites over a period of nearly one hundred years.

This resulted in a large data set, somewhat dominated by visual images but balanced against research into visitor perceptions and ‘reef community’ values. Much of the data is derived from Reef visitation, and only a relatively small percentage of the Reef is easily accessible. While recognising that many factors, personal and cultural, will influence the experience of place and aesthetic perceptions our analysis proceeded on the assumption that the environmental and experiential attributes in one location would be equally valued in every location in which they are present and be equal for all types of users. Achieving a greater level of refinement was not possible in this exploratory project.

An analysis of historic photographs of the Reef provided data on the visual attributes of the Reef that have been the focus for photographers over the past century and how people have engaged with the Reef. This revealed a striking continuity in the types of images, in the selection of natural features or elements, the framing of the image and the subject matter over the past century even though the ways in which people have been able to access and experience the Reef have changed markedly. However while the subject matter remains consistent, in some key aspects the nature of engagement with the Reef and especially the marine fauna reflect an evolution in public awareness of environmental conservation. For example early images of ‘turtle riding’ as a tourist activity are replaced by underwater images of turtles swimming freely or people protecting baby turtles as they make their way across the sand to the water. Similarly appreciation of shells and coral moves from images of collecting and collections to those of the in-situ living reef.

In her analysis of tourist images of the Great Barrier Reef Pocock (2008) found that over the 20th century advances in technology enabled greater access to the Reef in general, immersion in the underwater realm and the capturing this realm in photographs but alongside this
‘embodied access’ has decreased with increasing restrictions on activities identified as harmful by conservationists, especially from the 1960s leading to ‘a radical shift from touching, tasting, collecting and watching reef life to a focus on singularly visual experiences and photographic collecting’ that has been reinforced by visual reproductive technologies (2008:105-106).

The main sources of data for our analysis of experiential attributes included visual images, noting consistencies and changes over time in the experiential qualities evident in the images, with particular attention given to the images created and posted on-line by reef tourists. Reef perception studies, primarily focused on visitors (for example Vanclay (1988), Sherl et al (1997), Moscardo et al (2001, 2004), Ormsby et al (2004), McNamara & Prideaux (2009), Coglan & Prideaux (2009) amongst numerous others), offered a different type of data, often examining the motivations and expectations of visitors prior to their visit as well as their response to experiencing the reef environment. Some studies defined specific experiential motivators, for example the enjoyment of nature and scenery, solitude, and escape from crowds and noise (Ormsby et al 2004). Further data sources included how reef experiences are evoked in tourism promotions, noting that these are both based on perception studies and an influence on the expectations of future visitors. In relation to the perceptions of the Australian community and the communities that live along the reef, we examined available data on place meaning and attachment, drawing on a number of sources including national household surveys (AGB McNair 1994, 1995), in-depth studies (for example Wyveen et al 2010; McIntyre-Tamwoy 2004; Harrington 2004; Green et al 1999; Young & Temperton 2007), and the results of stakeholder workshops and a post-workshop survey undertaken by GBRMPA between August to October 2012.

Data obtained through the analysis of historical and recent imagery, the literature on tourism promotion and visitor and reef community perception studies was summarised and presented against the aesthetic values expressed in the Statement. This enabled us to describe in greater detail the aesthetic values of each of the nine values statements in the Statement that address the ‘natural beauty and aesthetic value’ component of Criterion vii as ‘extended descriptions of Outstanding Universal Value’. The table below illustrates this. The geographic extent (column 1) of each extended descriptions of Outstanding Universal Value (column 2) is an important elaboration of the aesthetic values in the Statement. Further, the evidence examined in our analysis revealed that some aesthetic values described in the Statement are more extensive than indicated in the Statement. For example, there is strong evidence that the aesthetic values described in the statement ‘The Whitsunday Islands provide a magnificent vista of green vegetated islands and white sandy beaches spread over azure waters’ applies to a far wider extent than the Whitsundays. Looking at this example, our analysis identified four distinct ‘extents’, each associated with specific ‘extended descriptions’, lenses, and environmental and experiential attributes. The last column lists exemplar places, and through our work we were able to expand the range of exemplar places recognised.

Recognising that the environmental attributes of aesthetic value will vary in extent and quality across the Reef meant developing a method of mapping these attributes to accompany our analytical tables. Initially, we examined the use of GIS data held by the GBRMPA or the Commonwealth government; however this was impractical given the scale of the Reef and the project scope. And while the GBRMPA have extensive data layers many of the identified attributes were not easily able to be mapped.

In response we created an approach that we called ‘conceptual mapping’. It involved using the environmental and experiential attribute typologies and illustrating where these are located across the World Heritage property, thus linking the values expressed in the Statement to elements within the property. A conceptual map was prepared for each of the nine values statements in the Statement. The difference between conceptual mapping and GIS-based approaches proved to be important. To take another example from the Statement, ‘pristine sandy beaches’ is an environmental attribute associated with aesthetic value. Mapping of this attribute geographically across the Reef would involve identifying all such beaches and delineating boundaries. This data set was not available and we did not have the resources to develop it. On the other hand, conceptual mapping enabled typical or idealised environments of
Statement of Outstanding Universal Value (Criterion vii)

1.3 The Whitsunday Islands provide a magnificent vista of green vegetated islands and white sandy beaches spread over azure waters.

<table>
<thead>
<tr>
<th>Extent</th>
<th>Extended description of Outstanding Universal Value</th>
<th>Lens</th>
<th>Environmental Attributes</th>
<th>Experiential Attributes</th>
<th>Exemplar Places</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Islands</td>
<td>1.3.1 The Whitsunday Islands exemplify the exceptional natural beauty associated with the diverse and distinctive combinations of landforms, textures and colours created by the islands, island groups and the sea that are visible from water level throughout the property.</td>
<td>WL</td>
<td>Continental islands, Beaches, Fringing reefs, Coral cays, Water</td>
<td>Beauty, Naturalness, Tranquility</td>
<td>GBR wide</td>
</tr>
<tr>
<td>Large Continental Islands</td>
<td>1.3.2 The exceptional natural beauty of the property is associated with spectacular scenery within the continental island groups visible from above, and at water level and characterised by rugged mountains with dense and diverse vegetation, sweeping beaches and adjacent pristine fringing reefs and the absence of human presence.</td>
<td>P,WL</td>
<td>Continental islands, Beaches, Bays, Cliffs and rocky shores, Mangroves, Fringing reefs, Water</td>
<td>Beauty, Naturalness, Tranquility</td>
<td>Whitsundays*, Flinders Group*, Keppel Islands*</td>
</tr>
<tr>
<td>Small Continental Islands and Coral Cays</td>
<td>1.3.3 The exceptional natural beauty and aesthetic importance of the property is associated with remote island groups, sand and vegetated coral cays surrounded by reef formations within a vast expanse of blue water and sky, characterised by lack of human presence and visible at sea level</td>
<td>WL</td>
<td>Continental islands, Coral cays, Coral reefs, Lagoon floors, Blue holes, Water</td>
<td>Beauty, Naturalness, Remoteness, Solitude</td>
<td>Lizard Island*, Capricorn Bunker Group*, Raine Island*</td>
</tr>
<tr>
<td>Northern Reef</td>
<td>1.3.4 The exceptional natural beauty of the property is associated with sweeping pristine and remote bays.</td>
<td>P,WL</td>
<td>Bays, Beaches, Water</td>
<td>Naturalness, Remoteness</td>
<td>Princess Charlotte Bay*</td>
</tr>
</tbody>
</table>

Table 1: Extended description of one of the aesthetic values in the Statement. (Source: Context 2013)
Discussion

Our investigation of the aesthetic values of the Great Barrier Reef was framed by three key factors – the immense scale of the Reef; the occurrence of aesthetic values throughout the property; and that people experience the Reef’s aesthetic values at different scales and under different conditions. Although there are few heritage places and certainly few World Heritage properties that are of the scale and complexity of the Great Barrier Reef, our work in developing a methodology to accommodate these factors has implications for the assessment of aesthetic values within the World Heritage system.

Our initial review of World Heritage properties indicated that there is commonly an alignment between the environmental attributes of aesthetic values under Criterion vii and those of other natural Criteria (viii, ix, x) and that a rigorous independent assessment of aesthetic values is rarely conducted. Rather, the Outstanding Universal Value of a property on aesthetic grounds is argued through the rhetoric of the language describing environmental attributes used in the justification of other Criteria. The most prominent environmental attributes identified through the analysis of the various data sets are very similar to those described under Criterion vii of the Statement for the Great Barrier Reef. However, in the absence of a clear and agreed methodology for identifying the attributes of aesthetic values, it cannot be assumed that the attributes of aesthetic values of other properties inscribed under Criterion vii have actually been identified.

We agree with the recommendation of IUCN (Mitchell 2013) that multiple strands of evidence – beyond a visual analysis or description – are required to justify a claim for Outstanding Universal Value on Criterion vii. From our work, we conclude that experiential and environmental attributes are both essential expressions of aesthetic values. The description of only environmental attributes under Criterion vii, which has been the standard practice (including in the Statement for the Great Barrier Reef) is not sufficient to justify, manage or monitor Outstanding Universal Value under this Criterion. In this regard our research identifies an area of the World Heritage system that requires substantial revision and development.
Our investigation demonstrated that a rigorous approach to assessment against Criterion vii is possible, noting that our work was framed by the values and attributes defined in the Statement and that these are exclusively visual aesthetics. Our project did not need to define a threshold for aesthetic values as part of assessing Outstanding Universal Value therefore the usefulness of our approach remains to be demonstrated where Outstanding Universal Value is still to be established or where aesthetic values recognised in a Statement are to be reconsidered.

Our research also has implications for the assessment and management of aesthetic values in natural environments in general. Descriptions of the aesthetic values of the Great Barrier Reef whether in images, research, perceptions studies and community values surveys, or in discussion with GBRMPA staff is consistently framed by the ways in which people experience the Reef. Environmental attributes are found throughout the Reef in different combinations and each has qualities that enhance their aesthetic value, for example in their form, colour, quantity and their inter-relationships. The aesthetic appreciation of these environmental attributes and their qualities will always depend on the manner and conditions in which they are experienced – in solitude or company, in clear or murky water and so on.

As we have demonstrated for the Great Barrier Reef, aesthetic values conceived of within an experiential framework can be assessed using a logical process of data gathering and analysis and this can provide the basis for the management of those values. Our use of a combination of artistic and creative sources, historical imagery and popular snapshots, visitor perception and community values studies built on Australian aesthetic value assessment methods developed in the 1990s for the Regional Forest Agreement studies and since 2004 for the National Heritage List, provided a robust and explicit basis for analysis. Historic photographs helped ground our understanding of contemporary perceptions, revealing important information about peoples’ relationships with the place, their aesthetic experiences and importantly how these have remained consistent over time despite technological innovations that have greatly increased access to and experience of the Reef especially from the air and under the water.

Although analysis of images of the Reef repeatedly highlighted a relatively small number of locations where these environmental attributes are juxtaposed or concentrated, this focus on specific localities reflects the opportunities for visitor access rather than the relative aesthetic richness of these localities. To enable recognition of aesthetic values – and their management – across the entire Great Barrier Reef, the environmental and experiential attributes and their inter-relationships need to be considered in other less accessible parts of the site. Conceptual mapping provided a means of defining and generalising both environmental and experiential attributes throughout the Reef, based on typologies of the different Reef environments. Testing of this method through a case study demonstrated that the conceptual mapping approach is easily adaptable to geographical mapping at the local scale.

Using this approach we were able to move beyond a fixed visual description of aesthetic values at specific locations to a conceptual focus on the Reef as a whole and provided an understanding of the attributes – environmental and experiential – that embody the visual aesthetic values at any location across the constantly changing environment of the Great Barrier Reef. This in turn will be able to provide a sound evidential basis for management of the aesthetic values of the Great Barrier Reef in response to specific impacts.

**Conclusion**

Many issues arose during our investigation of the aesthetic values of the Great Barrier Reef. Our engagement with staff of the GBRMPA enabled us to quickly build a more robust understanding of the Reef, the data available and the systems already in place to manage the Outstanding Universal Value of the Reef. However this was an essentially desktop project, limited in scope and able to draw only on existing data. In particular, our ability to research community values was very limited, especially in relation to Traditional Owner values, and further work on this aspect could enable a deeper cross-cultural understanding of aesthetic values. It would be of value to build on the work of Harrington (2003), McIntyre-Tamwoy (2004) and others through
further perception studies with the various communities who have associations with the Reef as a means of testing and expanding the findings of our analysis.

These researchers, and Pocock (2002) in particular, rightly emphasise that a focus on the visual in the assessment (and management) of aesthetic values does not fully account for and may mediate against aesthetics understood as ‘experiential’. Our work highlights that all aesthetic values have experiential as well as physical attributes that need consideration in assessment and management of those values. Certainly non-visual aesthetics have not been sufficiently considered in the identification and assessment of values under Criterion vii in the World Heritage system in general. They are not recognised in the Statement for the Great Barrier Reef but even if they are considered in evaluating the Outstanding Universal Value of the property, unlike the visual aesthetics, they may not be considered to meet this high threshold. The current recognition of the need for systematic assessment, identification of attributes and management processes for aesthetic values described under Criterion vii in World Heritage properties provides the opportunity both to move beyond the visual in exploring methodologies appropriate to the assessment of a range of aesthetic experiences and to clarify thresholds for Outstanding Universal Value in relation to Criterion vii.

Our method expanded understanding of the environmental attributes underpinning aesthetic values as they are described in the Statement for the Great Barrier Reef and for the first time identified the experiential attributes that hold those values. In doing so, the project provided a stronger basis from which the GBRMPA may develop strategies for the management of aesthetic values independently of those for the management of values described underCriterion viii, ix and x of the Statement. The potential of our approach for investigating the aesthetic values of other landscapes – and in particular for demonstrating the potential Outstanding Universal Value of a natural property during the World Heritage nomination process – remains to be explored.

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