

Palaeographia: an exhibition blending science and art

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Resumo

A exposição Palaeographia foi realizada a propósito do Primeiro Congresso Paleontológico Internacional e consistiu na integração diversificada e multimédia de fósseis originários da Austrália com documentos de ilustração científica e objectos de arte. O objectivo de Palaeographia foi o de ilustrar o património paleontológico australiano. As explícitas relações entre ciência e arte estabelecidas na exposição suscitaram reacções muito positivas por parte dos visitantes. Palaeographia teve grande sucesso junto de famílias e de grupos escolares, desencadeando frutuosas oportunidades para o desenvolvimento de programas educacionais que incorporassem elementos artísticos e científicos. Palaeographia constituiu assim um importante instrumento para a captação e fidelização de novas audiências para a Galeria de Arte da Universidade de Macquarie (Nova Gales do Sul, Austrália).

Abstract

The exhibition Palaeographia was developed for the First International Palaeontological Congress. It consisted of original Australian fossil specimens juxtaposed with scientific illustrations and interpretive artworks in a variety of media. It illustrated Australia's palaeontological heritage. The linkage between science and art triggered positive comments by visitors. The exhibition was popular with families and school groups and provided an opportunity to develop education programmes that incorporated both art and science elements. The exhibition was therefore a mechanism for introducing a new audience to the gallery experience. An exhibition like this could only be developed in a University. The complex and diverse nature of its intellectual base allows a fertile collaboration between groups that rarely work together elsewhere. It was also a good example of how a University Gallery can promote the endeavours of its scientists to a broader audience.

Introduction

The First International Palaeontological Congress (IPC2002) held recently at Macquarie University featured its own art show. 'Palaeographia: Artworks from deep time' was an exhibition of original Australian artworks and fossil specimens inspired by the rich Australian fossil record. Presenting scientific illustrations of extinct fauna and flora, interpretative artworks in a variety of media and

original specimens, the exhibition illustrated the long and varied history of life on our ancient continent and its adjacent marine realm.

The exhibition was primarily developed for the congress as an innovative way to showcase Australian palaeontology to an international audience. It has, however, found much wider appeal amongst gallery visitors without a specific scientific background and Palaeographia has broken all

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attendance records at the University's Art Gallery. Plans are in development to bring the exhibition to an even wider audience next year.

There is something about palaeontology that strikes a chord with diverse audiences. Fossils have always fired human imagination. These shadowy projections, sometimes rich in detail, sometimes mysteriously cryptic, preserved by serendipity far beyond the limits of the original genetic mechanism, are disruptions in the fabric of time and space. They inspire awe and stretch our minds beyond the constraints of our perspective of the everyday environment.

To the early European settlers, Australia, once part of the great southern supercontinent Gondwana, was alive with strange creatures. Indigenous Australians, through their creation mythology (their Dream Time), incorporated a rich understanding of Australia's past into their culture. This process has epistemological, if not methodological parallels with the western intellectual tradition of palaeontology.

Palæographia also celebrated the fertile links between art and science by exploring the natural world from the perspective of geologic time and the inspiration this provides for the imaginative reconstruction of lost worlds inhabited by extinct, uniquely Australian creatures.

Palæographia was designed specifically to be accommodated in the Macquarie University Art Gallery. The Gallery has a floor area of 220 square metres for the display of specimens and scientific models and 45 running metres for the display of artworks. The original concept for the show was discussed with the Gallery Director, Professor Di Yerbury, six months prior to the conference. A curatorium consisting of Gallery staff and congress organisers then developed the exhibition content from Macquarie University's own collections and negotiated loans from other collecting agencies and individuals.

Palæographia was essentially a joint project between Macquarie University's Art Gallery and Earth

Sciences Museum. Whilst the University's collection made up the majority of content, an impressive range of both art and science based, public and private organisations and individuals also contributed items (see acknowledgements). Some of these were eclectic items such as The Perth Mint's unreleased set of sterling silver dinosaur coins and some spectacular pottery with fossil motifs by Newcastle potter Nora Moelle. The aim of the exhibition was to inspire a deeper understanding of the antiquity of the Australian environment through the dual processes of artistic interpretation and scientific reconstruction whilst emphasising their epistemological similarities.

Highlights

As noted above, the content of the exhibition was specifically developed for the scientists attending the congress. Some of the highlights of the exhibition, including notes on the selection of content, are discussed below. These illustrate examples of the juxtaposition of artwork and scientific specimens in the exhibition.

The Ediacaran fauna was first discovered in South Australia in 1946. It consists of strange soft-bodied creatures preserved as impressions in sandstones of the Flinders Ranges. They are among the earliest examples of complex multicellular animals, predating development of invertebrate skeletons 540 million years ago. Since their discovery they have been found in rocks of similar ages from many parts of the world. These creatures were the inspiration for artist Christine Ross's 'Brachina Gorge' series. Original specimens were exhibited on an open pedestal beneath the artworks.

Glossopteris is a unique Gondwanan plant from the Late Permian (c. 255 million years ago) of eastern Australia. It was first described from glacial sediments near Melbourne. The ice-age success of this plant was due in part to their habit of shedding their foliage during autumn and the abundance of leaves contributed much to Australia's coal deposits. *Glossopteris* is one of Australia's most common plant



Fig. 1 – Australian artist John Wolseley opens the exhibition in front of one of his works (Photo: E. Alexakis © Centre for Flexible Learning, Macquarie University).

fossils. Burning the coals in power stations releases energy from the sun locked away in plants millions of years ago. John Wolseley (Fig. 1) explores the unique Gondwana biogeography in his work *Java leaf Tiwi leaf*¹ and the sharp boundary of Wallace's Line, a phenomenon reflecting relatively recent, in geological timescales, closure of the former oceanic region between Australia and Southeast Asia. Artist Pip Stokes, in her work *Gondwana*, has focused on our unique southern flora. The fossil *Glossopteris* and its restriction to former Gondwanan continents was historically the basis of the scientific Gondwanaland concept.

Australia's only armoured dinosaur is the small ankylosaur *Minmi paravertebra* discovered just over

20 years ago and preserved only as traces of bone and skin. It was reconstructed specifically for the exhibition with detailed scientific accuracy by Newcastle artists Herbert Heinrich and Anne Llewellyn. It was the most popular feature of the exhibition with younger visitors (Fig. 2).

Diprotodon was a large marsupial herbivore, one of the megafauna that flourished in Australia prior to the last ice age. Its closest living relatives are the wombat and the koala. From skeletal remains, Australian Museum artist Anne Musser recreated the animal in its natural environment. Some of Anne's precise scientific illustrations are also included in the exhibition. Also included are bark paintings by indigenous artists depicting giant short-faced

¹ John Wolseley is an Australian artist inspired by natural history and the environment. He has works in most major Australian galleries. A large body of his recent work has focussed on continental drift and the break up of Gondwanaland. The work *Java leaf Tiwi leaf* compares botanical characteristics separated by Wallace's Line despite their close geographic proximity.

kangaroos, typical of the long-extinct megafauna, being hunted by the earliest Australians.

The Winton dinosaur trackway in northwestern Queensland is the best documented dinosaur trackway in Australia. It preserves 10 seconds of sheer terror from 100 million years ago. A flock of small dinosaurs gathered by a lake were scattered by the sudden appearance of a large carnivorous dinosaur. The trackway has been intensively investigated and the sizes and speeds of the animals involved in the skirmish have been calculated. A replica of one trackway section was included in the exhibition. Artist Shane Whittaker of Macquarie University recreated the scene of the dinosaur stampede. This topic allowed the juxtaposition of scientific specimen (Winton trackway), model (small dinosaur on loan from the National Dinosaur Museum) and artwork.

Isabel Davies' 'Desert herbarium' captures the spirit of the naturalist and the human desire for better understanding through classification. The same requirement for comparative taxonomy is seen in the small field specimen cabinet of explorer John Oxley, who was responsible for much of the early exploration



Fig. 2 - Two young dinosaur fans with the reconstruction of the Australian ankylosaur *Minmi paravertebra*, illustrating the relationship between object and audience (Photo: E. Alexakis © Centre for Flexible Learning, Macquarie University).

of New South Wales. It is very similar to the collections of plants and minerals popular in the late eighteenth and early nineteenth century, such as the elegant ones in Malmaison, once owned by the great patron of natural sciences, the Empress Josephine (wife of Emperor Napoleon). This collection allowed Oxley, 180 years or so ago, to make direct comparisons between specimens discovered during exploration in inland Australia and specimens already identified within the framework of an established scientific scheme. The inclusion of a historical artefact gives the exhibition a broader context for the audience.

Throughout the long history of Gondwana, the types of animals that built immense reefs fringing the continental landmass changed with changing environments and genetic flexibility of the organisms. Reef building creatures from our deep past are completely different from those making up Earth's largest living structure, the Great Barrier Reef, today. These changing fortunes were illustrated by Anna Choi's 'The Dying Colony', an installation of ceramic sculptures. This work was exhibited with fossil corals from the Palaeozoic Era in the collections of the Earth Sciences Museum at Macquarie University.

Jorg Schmeisser's 'Gifts from the Sea' and 'Diary and Shells' are artworks that illustrate fossil and living invertebrates, the latter from present day marine platforms. Creatures such as ammonites featured in 'Gifts from the Sea' are common fossils, regarded in the Middle Ages as having been wicked creatures, 'coiled stone snakes'. They are in fact closely related to the living *Nautilus*. Schmeisser's work is exhibited together with 'Australian ammonites from the Macquarie University collections.

The famous fossil *Archaeopteryx*, with dinosaur bones and feather impressions, was the first evidence of the link between dinosaurs and birds. Since then the fabulous feathered dinosaurs of China have been discovered, but few realise Australia has a significant piece in the puzzle. Feathers preserved in minute detail from the Cretaceous (110 million years) shales of Koonwarra were long regarded as the second oldest feathers in the world. Though some

authorities believe that birds originated on the Gondwana supercontinent, the Early Cretaceous feathers from Koonwarra are the oldest evidence for birds on Gondwana. Their morphology compares closely in detail with the feathers of living cormorants.

For over a hundred years, enigmatic microscopic fossils called conodonts (cone teeth) have been recovered from limestones 220–450 million years old. For more than a century, scientists argued over the taxonomic affinities of these tiny objects, made of calcium phosphate, occurring sometimes in great profusion and in a bewildering range of forms. At various times they have been argued to belong to almost every major animal group. Although the interpretation is not universally accepted, it now appears they were in fact teeth from the earliest group of proto-vertebrates. Sydney artist Dean Oliver, fascinated by the spectrum of forms, accurately depicts a small sample of these bizarre items. The research of Macquarie University palaeontologists, hosts of the congress, is strongly focussed on this fossil group.

Education programmes

The broad nature of the exhibition, threading elements of art and science, allowed for the development of innovative education programmes. The congress also included a three-day workshop for science teachers. Topics covered in the programme entitled 'A Festival of Fossils', focussed specifically on the development of palaeontology programmes for various school age groups.

The programme included basic preparation and replication techniques, using trilobites and brachiopods to interpret environments, recovering and identifying foraminifera, a fossilisation experiment ('the good, the bad and the smelly'), determining how fast dinosaurs ran, fossils in open ended investigations, using palaeontological press releases as a basis for classroom discussion and running a field trip for students. Although the programme was designed for Australian teachers,

there was much interest from some of the international delegates and an opportunity for teachers and scientists to interact. A booklet for the programme was produced (SIMPSON & WINCHESTER-SEETO 2002) and it is intended to put some of the individual units on a Macquarie University website as downloadable pdf-documents in the future. Meanwhile some of the units are finding their way into the pages of our local education journals. The exhibition itself has been reported to the earth science profession (SIMPSON 2002a) and the museum profession in Australia (SIMPSON 2002b).

The education programme for school students conducted in the gallery included a unique approach, which put the students in charge of the information gathering and analysis of the objects and artworks on display. Student visitors were divided into groups and provided with focus questions for specific objects or artworks in order to prompt an investigation into the object/artwork in terms of its significance to the exhibition, place in the exhibition design plan, or relevance to other objects/artworks. The students were then asked to report back to the larger group with their findings. This task allowed for the students to be in control of the information gathered by reading extended labels provided with the objects/artworks, asking staff more about individual exhibits and sharing their own related experiences and knowledge about the objects/artworks. This task also allowed for close inspection and analysis of several exhibits and the supporting or related exhibits around them. It also gave the students freedom of speech and analytical thought when reporting to the rest of the group rather than being spoon fed the information and gave them a responsibility in educating their peers.

Floor talks were given for both school groups and the general gallery visitors throughout the duration of the exhibition, providing an overview of the exhibition theory, design, sourcing procedures, as well as information on specific objects/artworks. The talks were complemented by extensive use of extended labels throughout the exhibition, providing self-guided tours with some extra information.

Conclusions

For those seeking insights into our perceptions of the natural world there are two choices. They can visit museums, examine specimens, read scientifically accurate exhibit labels and plunge into original publications, or they can visit an art gallery and explore lost worlds through the vision and creativity of others. Palaeographia attempted to bridge some of the cultural divide between arts and science and, judging from the visitor numbers, was outstandingly successful in achieving this.

We believe universities are the ideal setting for collaboration across the 'artificial' divide between science and art. Whilst similar exhibitions could be developed through cross institutional links between

a natural history museum and an art gallery, universities are potentially the most fertile ground for these collaborations as they represent a vast and diverse spectrum of intellectual endeavour. Comments from the visitors' book indicate that general audiences are very receptive to the integration of science and art. This was best summed up by the following comment about the exhibition "Great left brain-right brain stuff".

Palaeographia was a good example of how a facility such as a University Art Gallery, often a pre-eminent vehicle for community interaction, can also be a showcase for its own scientific constituency. A number of regional galleries in three states have expressed an interest in hosting the exhibition during 2003 and 2004.

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