



memo



mass extinction monitoring observatory

a global monument

MEMO is the project to build a sublimely beautiful monument to the world's extinct species together with a biodiversity education centre. Conceived as a continuous spiral of stone, it will be lined with the carved images of the 860 species assessed as extinct since the dodo. It will be an ongoing monument. More stones will be added into the future if more species go extinct.

In the middle of it will be a great geological bell, to be tolled whenever a species goes extinct from now on, and to be rung in celebration, in concert with 'Bells for Biodiversity' all over the world, on the International Day of Biodiversity each year.

According to the world's biologists 860 extinctions over 350 years amounts to a 'mass extinction event' akin to that which wiped out the dinosaurs 65 million years ago. Alongside the monument will be an education centre where the arts will be used to interpret the science for all ages and the solutions to biodiversity loss will be explored.

MEMO will be sited on the Isle of Portland on the south coast of Britain. At the same time that the dodo was going extinct on Mauritius, the very idea that species could go extinct was being discovered here by 'London's Leonardo', Robert Hooke. On Portland, MEMO will look out over the geological World Heritage Site of the 'Jurassic Coast' – this is a place which already records the history of life.



above: artist's impression of how MEMO could look at night *CGI: © Adjaye Associates*

left: Thrift, thriving on Chesil Beach on pebbles and seaspray

far left: Hawaiian Haha tree, extinct in the wild *by Harry Brockway, Portland 2008*

“The current loss of biological diversity on Earth is one of the greatest crises of our time with profound long-term consequences for mankind. One of the reasons that it continues unabated is a lack of public awareness of the issue and the value that biological systems provide including everyday fundamentals like fresh air, clean water and fertile soil. We urgently need to rectify this. And that is why MEMO is so important to the world. Combining art, science and public participation, MEMO is a truly unique educative tool of global significance.”

Ahmed Djoghla
*Executive Secretary of the UN
Convention on Biological Diversity*

right: Edward Norton,
UN ambassador for Biodiversity with
MEMO bell *New York 2010*



Tim Smit



David Adjaye and Sebastian Brooke
Portland 2010



Sir Ghilleen Prance



From Stonehenge to the Taj Mahal we have always built monuments of stone, whether as observatories by which to better understand the world, or as memorials by which to mark what we hold dear. We seek to combine the two in building a monument for our time, to bring together the best of the arts and sciences in reflection on the true wonder of this world – the variety of its life.

a collaboration of science and art

The project was conceived in 2006 by locally trained stonecarver and Project Director, Sebastian Brooke, and established as an independent educational charity in 2007. Sir Ghilleen Prance, the former Director of Kew Gardens, is the Chairman of the trust. Tim Smit of the Eden Project is the Principal Adviser. Many of the world’s leading scientists are supporting the project as Patrons, while Sebastian has been collaborating on design with internationally acclaimed architect David Adjaye, his talented team at Adjaye Associates, and engineers ARUP.

Strong partnerships have been forged at local, national and international levels: with community groups and schools on Portland; with the local authorities; with the Royal Society and the Zoological Society of London; and with IUCN and the Species Survival Commission, the organizations responsible for producing the IUCN Red List of Threatened Species™ – the data on which the monument will be based. The Secretariat of the UN Convention on Biological Diversity has identified MEMO as a key communications project of the United Nations Decade on Biodiversity, 2011-2020.

“MEMO is an inspirational project that is sure to raise the profile of extinct and threatened species and reach out to previously untapped and wide ranging audiences.”

Simon Stuart *Chair, IUCN, Species Survival Commission*

“The striking form of the structure is rightly designed to be seen from afar. It will complement the clifftop skyline, which here on West Cliff is profiled entirely by centuries of stone working.”

Stuart Morris

Portland historian

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above: Denys Brunden the geomorphologist responsible for securing World Heritage Status for the Jurassic Coast, making his mark for biodiversity, Lyme Regis Fossil Festival 2010

a magical location

The Isle of Portland draws together themes of architecture, geology and the natural environment to provide a setting of profound symbolic resonance and great educational power. The Crown Estate and Albion Stone are providing a magnificent site on the west cliffs overlooking Hallelujah Bay and Chesil Beach.

The source of fine Portland limestone, the island has provided the materials for great works of architecture ever since Roman times. Much of central London is built of Portland stone and the UN building in New York is faced with it. Set within the landscape from which its materials were cut, MEMO will be an unusually vivid example of sustainable construction. Fine carving stone, rough quarry blocks and aggregate for concrete – as well as the stonemasonry skills necessary to build the monument – will all be sourced from within a stone’s throw of the site.

Portland is also part of England’s only natural World Heritage Site for its geological importance. The Jurassic Coast charts 185 million continuous years of the history of life. In effect MEMO will bring that record up to date, above ground, by the indigenous arts of Portland – the architectural arts of stonemason and carver. The Jurassic Coast not only grounds MEMO within the conceptual territory of ‘world heritage’, but also, the story of modern extinction, within the vast narrative of the geological history of life.



above: Nicodemus’ knob a column of stone on the east cliffs of Portland which was ‘left’ by the quarrymen to mark the original height of the island

left: United Nations Building New York © Jeremy Edwards

Isle of Portland collection of Stuart Morris



a place of discovery

8 The very idea that species could go extinct was first deduced from Portland fossils in the aftermath of the Great Fire of London of 1666. The discovery was made by the Surveyor of the City of London, Robert Hooke. Like his great collaborator, Christopher Wren, Hooke was a pioneer scientist of the nascent Royal Society as well as an architect.

The giant ammonites commonly found in Portland stone were so large, said Hooke, so unlike any living species, that they must be the remains of species ‘totally destroyed and annihilated’. His discovery of ancient extinction on Portland was made just as the dodo was dying out on Mauritius, the iconic and among the first of the extinct species on the Red List.

restoration and regeneration

Despite centuries of extraction, Portland’s quarries are pregnant with the potential for natural renewal. The island is internationally important for limestone plants, lichens, butterflies and birds. The building of MEMO will

MEMO exhibition at St. Paul’s Cathedral 2009



Portland quarry



top right: Guillemot, Portland cousin of the extinct Great Auk which also used to nest on the island’s cliffs © Ken Canning

below: the staircase inside the Monument to the Great Fire of London designed by Wren and Hooke to also house a 200ft long zenith telescope

right: Titanites giganteus as drawn by Martin Lister FRS, 1693



“The potential cultural, economic and educational benefits are huge.” Tom Grainger

outgoing CEO, Weymouth and Portland Borough Council 2010

entail ten acres of quarry being permanently restored to species rich limestone grassland to form part of the coast-to-coast ‘Portland Quarry Park’.

Portland and its people have given much in the service of architecture. Six million tonnes of stone have gone to London alone. MEMO will be a great work of architecture to be retained by the island, to be run as a visitor attraction, providing permanent jobs, attracting tourists and showcasing the proudest stonemasonry traditions of the island.

left: blocks, quarried, squared up, but never used for the rebuilding of London *East Weares, Portland*





a turreted gastropod the *Portland Screw*

an iconic structure

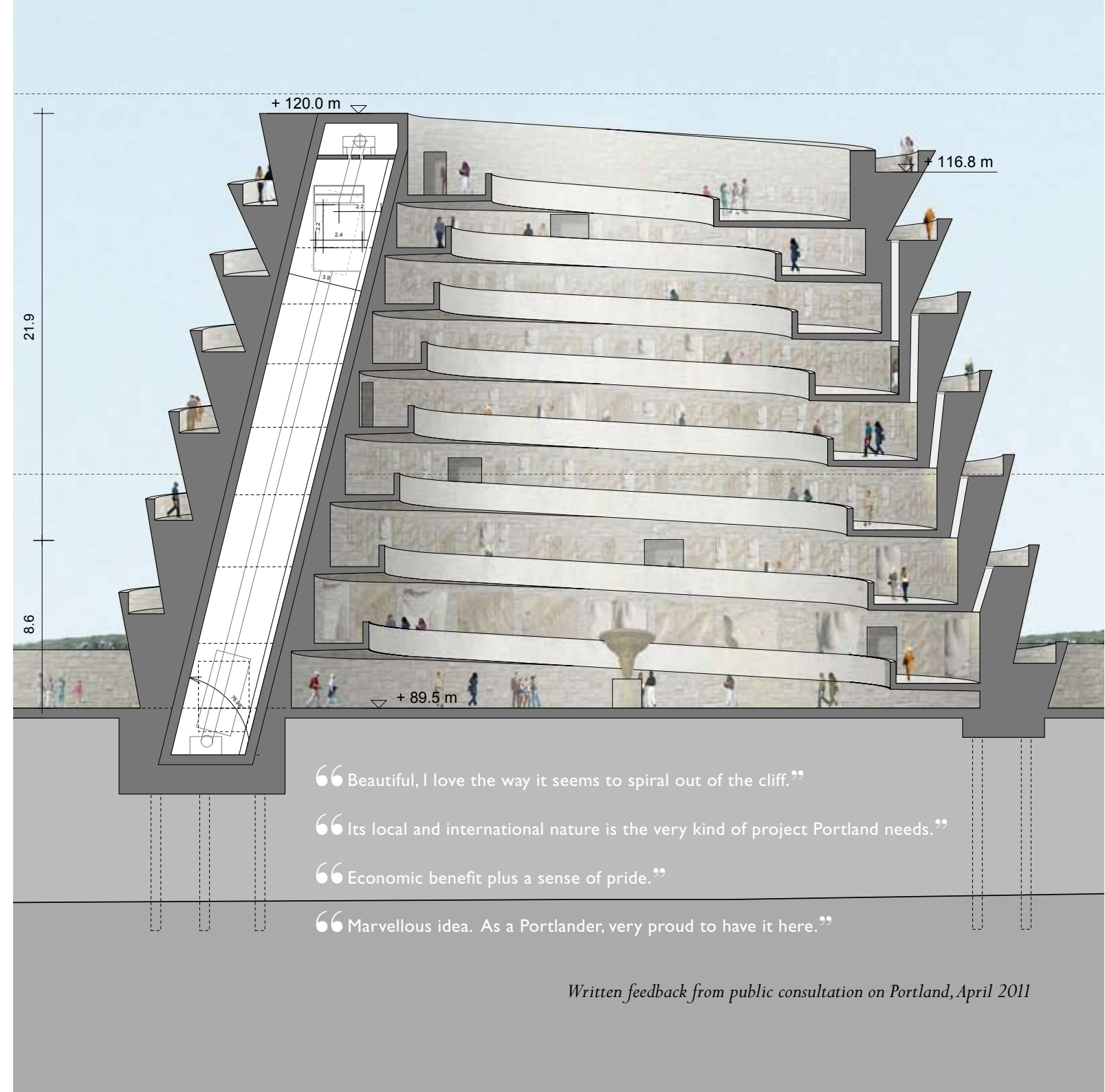
Set into the stony ground of the island, David Adjaye's design is inspired by a second characteristic fossil found there: the Portland Screw. A 'turreted' gastropod, this is a creature with architecture built into its very biological description. The image is of a great spiral of stone growing out of the cliff.

The floor of the monument is accessed via a 'cut' and finally a tunnel into the ground. Inside is a continuous spiral walkway, lined with the carvings of the extinct, linking Earth to sky, wrapped around a great central space. In the middle of the floor will be the bell facing an 'oculus' of sky above.

The walkway spirals up at disabled access gradient towards, and ultimately right through, the oculus to a colossal sea view and Chesil Beach stretching away into the distance. At 21m above ground, the height of the monument marks the same dimension removed below ground by quarrying. An exterior ramp winds down to the education centre which is built into the ground in order to maximize the area of restored landscape.

below: 'before' and 'after' site plans of Bower's quarry showing area to be restored to limestone grassland

right: section through MEMO © Adjaye Associates



“Beautiful, I love the way it seems to spiral out of the cliff.”

“Its local and international nature is the very kind of project Portland needs.”

“Economic benefit plus a sense of pride.”

“Marvellous idea. As a Portlander, very proud to have it here.”

Written feedback from public consultation on Portland, April 2011



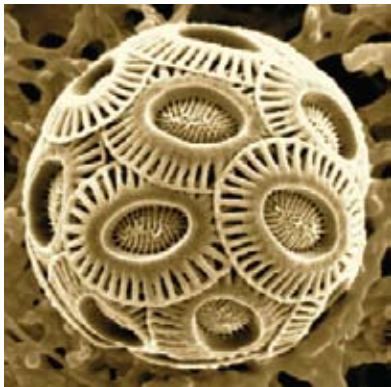
“The MEMO Project is beautiful, it is powerful and its message is simple. Its location, like a sentinel surveying the vast landscape of life past and present on our fragile planet, is perfect. Its creation will provide a global icon to our need to respect and protect the natural world and will ask, in its mute testament whether we are worthy of the name we gave ourselves: *Homo sapiens* – the wise hominid.”

Tim Smit KBE *co-founder and CEO of the Eden Project, and Principal Adviser to MEMO*

left: Harry Brockway carving the endangered Pink seafan *the Lyme Regis Fossil Festival 2010*

right: dredged up from deep time; Marcus Vergette's first experimental stone-cast bell © Peter van Allen





limestone is created by life:
Emiliana Huxleyi the plankton
species responsible for most
limestone precipitation today



education

From the Paleolithic caves to Disney and Dreamworks, we have been telling animal stories forever. Especially to children.

The stories of the extinct bear witness to exactly the same threats now faced by endangered species and those who seek to conserve them. The dodo tells of invasive species; the Bali tiger of habitat loss; the passenger pigeon, overharvesting and the golden toad, climate change. Meanwhile species like the gastric brooding frog illustrate the implications of biodiversity loss for biomedical research.

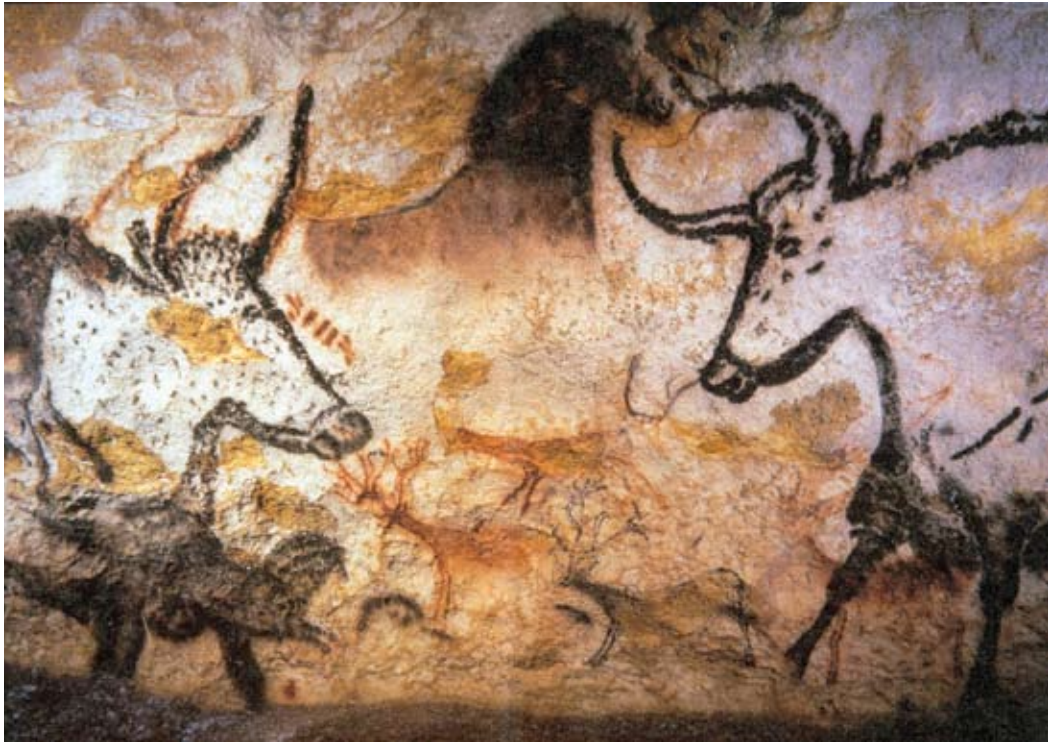
The conservation solutions to biodiversity loss will be explained and the success stories will be told – like that of Przewalski’s horse which was reintroduced into the Mongolian steppe in the 1990s. And the sheer mysterious beauty of our fellow creatures – the original inspiration of all the arts – will be explored along with our myriad ecological, economic and cultural connections.



far left: stonemason
Anthony Denman teaching at the
MEMO festival *Portland 2008*

left: members of the public
carving Peter Randall-Page’s
‘Unique Tessellations’
MEMO Festival, Portland 2009

the extinct passenger pigeon
once the most populous bird on Earth



cave painting *Lascaux, France*



“I went home and showed all my fossils I found to my family and told them that I carved on a massive block to go on an island and it’s going to stay there forever.” **Isabelle**
Feedback on MEMO activities on Schools Day at the Lyme Regis Fossil Festival, 2010

“Some ‘difficult’ students suddenly became engaged in the stonework and stayed at lunch and after school. The presence of MEMO has been brilliant.”
Non-teaching member of staff
Feedback from MEMO residency at Royal Manor Arts College, Portland, 2010

Robert Hooke, human head louse
Micrographia 1665



“...the Earth it self, which lyes so neer us, under our feet, shews quite a new thing to us, and in every little particle of its matter, we now behold almost as great a variety of creatures as we were able before to reckon up on the whole Universe it self.”

Robert Hooke on putting a speck of stone dust under his microscope and discovering the form of a seashell: *Micrographia*, 1665



MEMO at the Lyme Regis Fossil Festival 2009

The site frames the subject within the vast geological picture, within the narrative of scientific discoveries of the early Royal Society and the great national story of the rebuilding of London. The architecture itself will provide many creative teaching opportunities from the lichens that will grow on it to the role of limestone deposition in the global carbon cycle. Like all limestones, Portland, both stone and island, is largely comprised of the bodily remains of ancient creatures.

The on-site education programmes will mobilize stone carving and all the arts to interpret the science for all ages. Schools parties will carve patterns based on the forms of micro-organisms and the geometry of organic growth, while all visitors will be invited to mark their visit – and make their mark for biodiversity – by carving their initials beneath a (yet to be revealed) inscription: the Portland Memo.



above: MEMO Residency in Portland schools 2010
extinct/endangered Janus-head masks at Underhill Primary

residencies in schools

Making the necessary carvings will involve both the training apprentices on Portland and international carving festivals, but many of the carvings for the monument will also be created in artist's residencies in schools all over the world. In a pilot at Royal Manor Arts College on Portland, we found biodiversity so fundamental that it migrated quite naturally across subject boundaries. Each residency will include the making of a sculpture of an endangered species to remain in – the species to be selected, researched and ultimately 'adopted' by – the school community in which it was made.



the extinct golden toad



Miranda Richardson ringing a Bell for Biodiversity *St. Paul's Cathedral, Biodiversity Day 2009*

the big bell

In order to make all future extinctions audible as well as visible, in the middle of the monument will be a great 'geological' bell to be tolled whenever another species goes extinct. Following the success of a final scale model cast at Taylor's Bell Foundry in Loughborough in February 2012, it will be cast the Bronze Age way - from a stone mould. In particular it will be cast from 'roach', the youngest of the Portland strata which is riddled with the fossil hollows of Jurassic shellfish.

Upside down, Earth mounted, with mouth facing the sky, it will be nearly 10 feet in diameter, the height of a basketball player, and weigh 9 tonnes. It will be cast at Taylor's within the original cast iron 'flask' which yielded *Great Paul* in St. Paul's Cathedral - the biggest bell ever cast in the UK. The connections with the City of London will be further cemented by naming the 4 foot diameter maquette in honour of 'London's Leonardo', Robert Hooke, who first alerted the world to the possibility of extinction. Hopefully it can be permanently sited in the City.

bells for biodiversity

On 22 September 2010 our first experimental roach-cast bell was rung at the UN in New York as heads of state gathered to discuss biodiversity for the first



above top: first casting in a stone mould *Portland 2009*

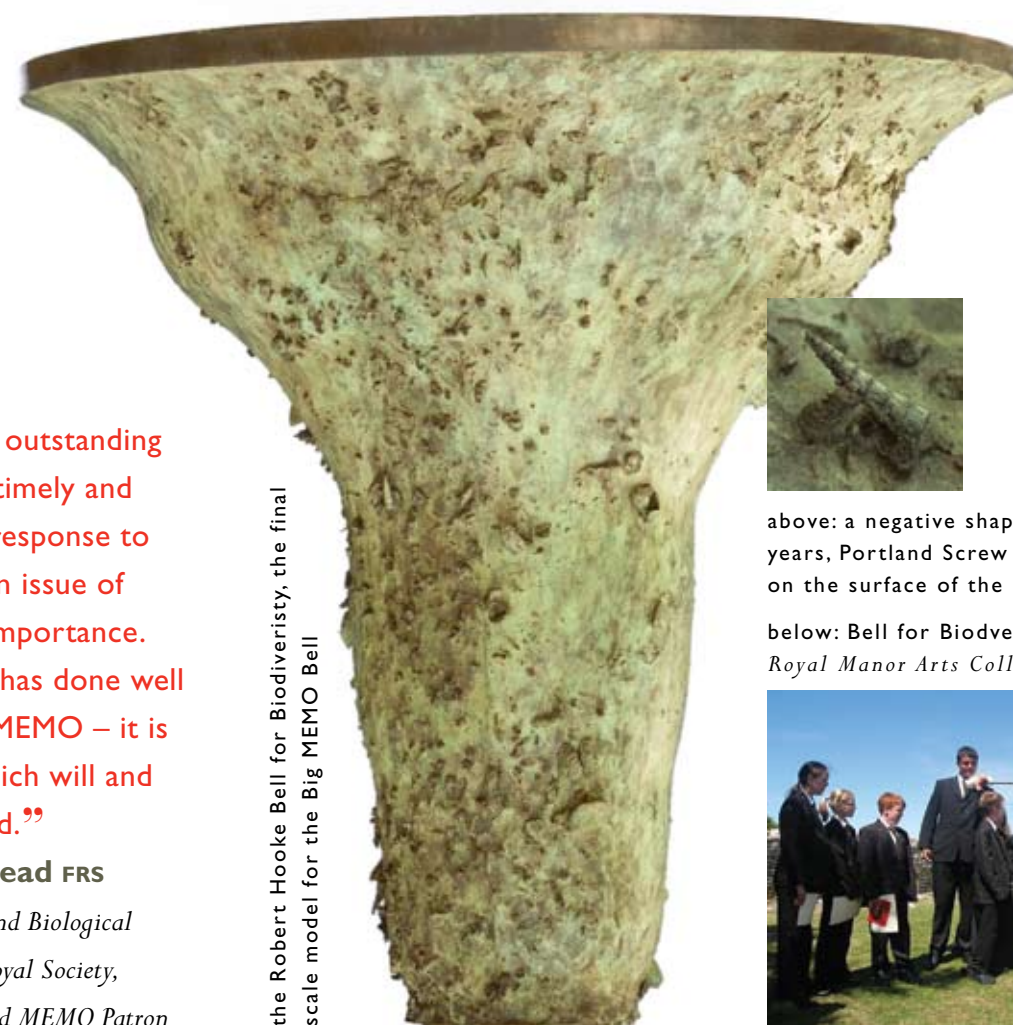
above below: Marcus Vergette's 28 maquettes for the big Bell *Lyme Regis 2010*

“MEMO is an outstanding project... a timely and imaginative response to addressing an issue of vital global importance. The Society has done well to endorse MEMO – it is a project which will and must succeed.”

Sir David Read FRS

Vice President and Biological Secretary, the Royal Society, 2003-2008, and MEMO Patron

ringing a Bell for Biodiversity *Hindu temple 2010*



the Robert Hooke Bell for Biodiversity, the final scale model for the Big MEMO Bell



above: a negative shape for 150 million years, Portland Screw embodied in Bronze on the surface of the Robert Hooke Bell

below: Bell for Biodiversity *Royal Manor Arts College, Portland 2009*



time. Hundreds of bells around the world were rung in concert with it that day.

Bells are for celebration as well as mourning and warning. They exist in all cultures and in everyday life – in schools, on ships, in farmyards and town halls, as well as churches and temples – the world over. As the International Decade on Biodiversity begins, we aim, with our international partners, to celebrate Biodiversity Day on 22 May each year, with a cacophony of such international bells.

“I was deeply moved on learning of this brilliant, profound, and ultimately humanitarian enterprise. It does the UK proud.”

Professor E.O.Wilson

the ‘father of biodiversity’

and Patron of MEMO



above: West African Black Rhino
by Joanna Szuwalska and
Matt O'Donovan, Portland 2008

an olympic launch

Full planning permission was granted by the unanimous vote of the local planning committee in February 2012. 20,000 foreign journalists are expected in the UK for the Olympics this summer and the sailing events are taking place on the waters below our site. To celebrate securing planning permission the project will be launched for the international media on the island this summer.

timelines

Phase I, including the development of architectural design and business plan for the submission of the planning application, and pilot events and exhibitions to test the project with the public, has been completed.

Phase II includes the 2012 launch, further planning, project management and fundraising costs. It will run to December 2013 and has a budget of £500,000.

Phase III: construction of the memorial, education centre and further carvings will take up to 18 months.

capital cost and business plan

The capital cost for constructing MEMO will be £20-25 million (there are two alternative plans for the education centre). It is anticipated that this will be raised from a mix of private, public, corporate and charitable funders. The site is being provided by The Crown Estate on a 99-year lease for a peppercorn.

In order to achieve Phase I, funding totaling £150,000 has been raised from



© Norman Lomax

Dorset County Council and numerous ‘Founding Benefactors’ with significant additional gifts in kind from members of the design team and others.

The business planning has been on the basis of a pay-for-entry visitor attraction with a top entry fee of £9. Arrangements whereby a top-up donation yields giftaid on the whole entry price will produce revenue funding each year for local and international conservation projects.

Annual visitor numbers are projected at 140,000 within three years of launch. With a future operations budget of £1.2 million, the project is expected to create 20 permanent jobs on the island and diversify the tourism offer of the wider area.

sponsorship & funding

With planning permission in place, the trustees are now actively seeking major grants and sponsorship partnerships for Phases II and III.

- Naming opportunities are available for segments of the building, collections of carvings, education centre, or other bespoke recognition of leadership support.
- As a stone-carving project we regard the carved recognition of donors on the monument as a creative opportunity.

a geological moment

“...tho’ some possibly may think there is too much notice taken of such a trivial thing as a rotten Shell.” **Robert Hooke** *Discourse of Earthquakes*, 1668

Human culture is unimaginable without stone. We made our first tools from it. We carved our first images into it or else painted the images of animals onto its surface. We have always embodied our triumphs and disasters in monuments of stone.

Since the 17th century when we began to understand the fossils it contains, we have learned from stone an ever more miraculous story of evolving life, on this the only planet where living creatures are yet known.

Fossils are also our only yardstick for the future. It is comparison with the fossil record which tells us that 860 species extinctions over 350 years is a radical acceleration from the natural rate.

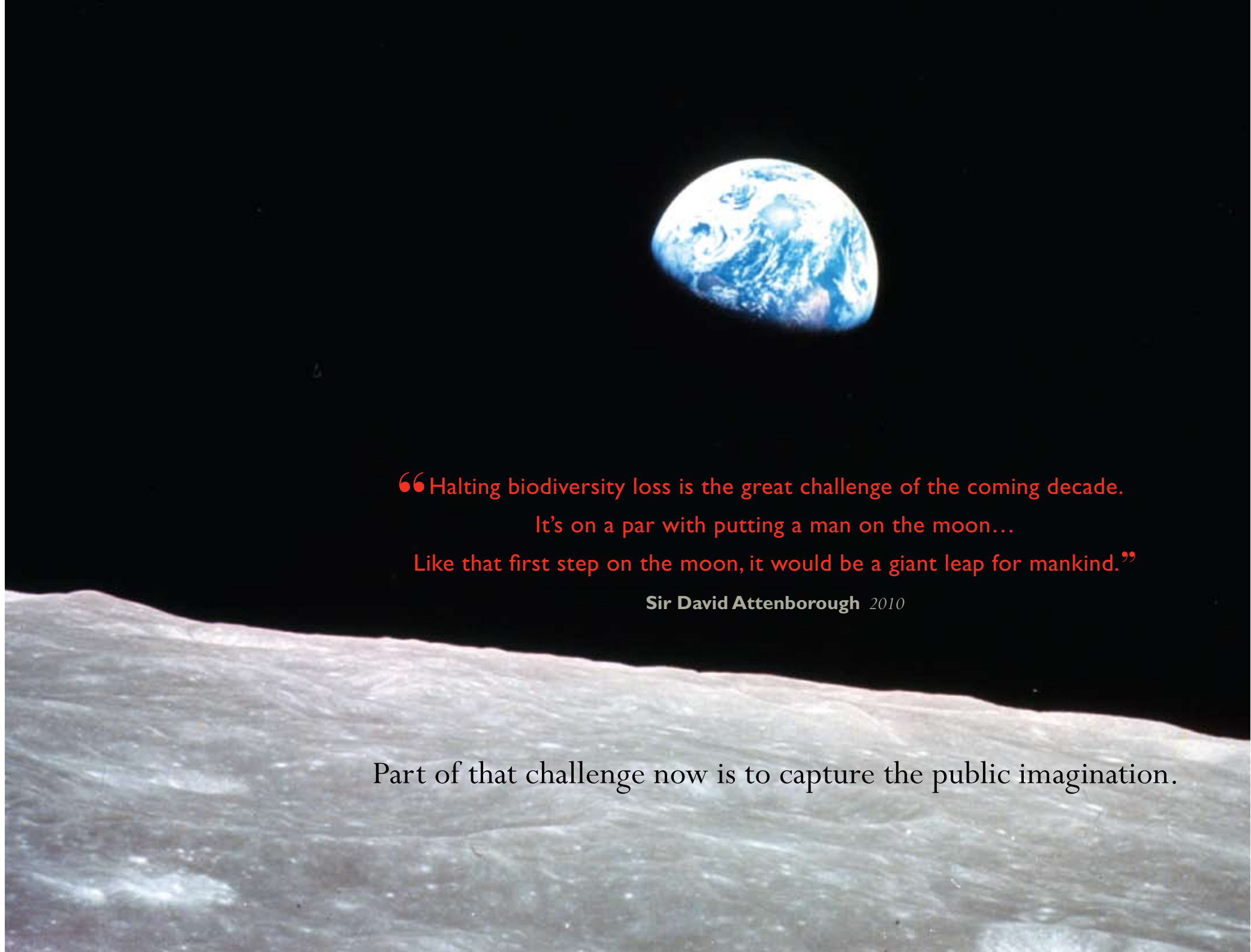
For every one of those 860 species more than 20 are now endangered.

Earthrise from the moon © NASA

“Halting biodiversity loss is the great challenge of the coming decade.
It’s on a par with putting a man on the moon...
Like that first step on the moon, it would be a giant leap for mankind.”

Sir David Attenborough 2010

Part of that challenge now is to capture the public imagination.



people and partners

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Richard Fortey FRS
Peter Luff
Andy Matthews
Michael Murphy
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VHM *Chair*
Maryann Woodrow

design
Adjaye Associates *Architects*
ARUP *Engineering*
Sebastian Brooke
Project Director
Coe Design *Landscape Architects*

endorsed by



Mike Kelly *Planning*
Davis Langdon *QS*
Peter Randall-Page *Sculpture*
Marcus Vergette *Sculpture
and Bell design*
Glynn Williams *Sculpture*

advisers
Tim Smit KBE *Principal
Adviser*
IUCN Species Survival
Commission *scientific advice*
Trowers and Hamlin
legal advice, construction
Thorne and Co. *legal advice,
property*

partners
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Will Whitby
Alex Wood
Emily Young

supported by

Starting up MEMO has involved a very wide range of talented people. Achieving Phase I could never have happened without the financial support of Dorset County Council, the Worshipful Company of Masons, and Management Consultants, the Weymouth and Portland Partnership and the generosity of our many Friends and Founding Benefactors. Nor could it have been achieved without the generous support of both Albion Stone and Stone Firms.

right: the Yangtze dolphin declared extinct in 2006 photo: © Nick Gordon design: chris j bailey © 2012

for more information please contact Project Director, Sebastian Brooke:

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m e m o

“The MEMO Project should
never have been necessary.
But necessary it is, and I am
glad to see human imagination
involved in commemorating
the diversity of life rather
than diminishing it.”
Philip Pullman *MEMO Patron*



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