



memo







mass extinction memorial 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 necessary.

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

far left: gastric brooding frog *designed and carved by Tim Lees, 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 Djoghlaif Head of the UN Convention on Biological Diversity

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



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 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 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.

Sir Ghilleen Prance



Tim Smit



David Adjaye and Sebastian Brooke  
Portland 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 Estates 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 arts of stonemason and sculptor. The Jurassic Coast not only grounds MEMO within the appropriate 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 stack of stone on the east cliffs of Portland which was ‘left’ by the quarrymen to mark the original height of the island*

**far 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



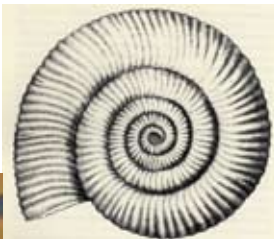
Portland quarry



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

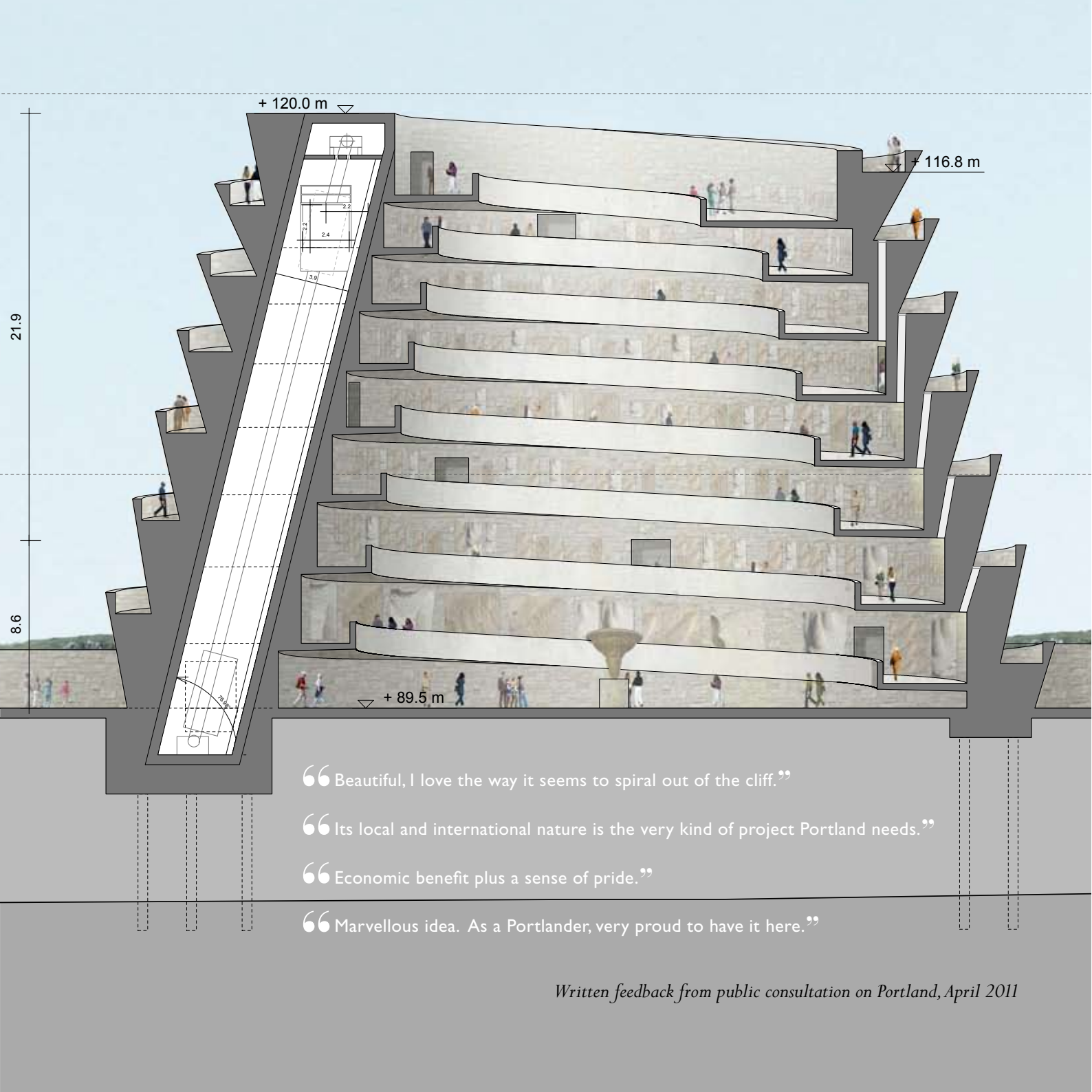
Set into the stony ground of the island, David Adjaye’s design is inspired by a second characteristic fossil found there: the Portland Screw. A ‘turreted’ gastropod, this is a creature with architecture built into its very biological description. The image is of a great spiral of stone growing out of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

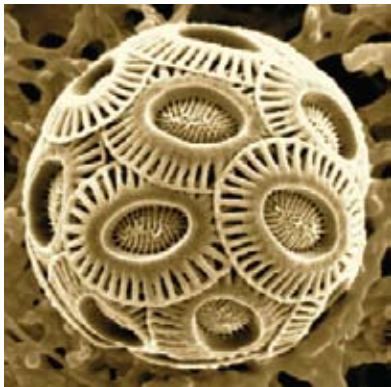
**Tim Smit** KBE *co-founder and CEO of the Eden Project, and Principal Adviser to MEMO*

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

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







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

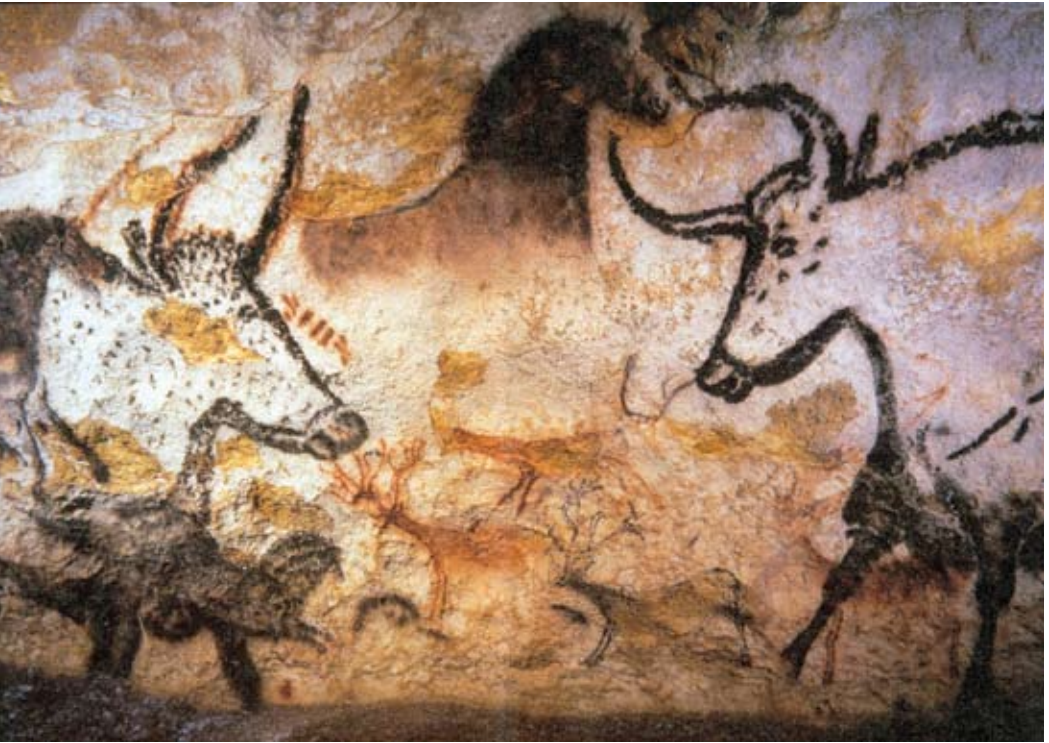


# education

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

right: 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. Following a successful experiment in 2009, it will be cast from a stone mould, in particular 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 ten feet in diameter, the height of a basketball player, and weigh nine tonnes. It will be cast at Taylor's Bellfoundry in Loughborough inside the original cast iron 'flask' which yielded the UK's biggest bell, Great Paul, in St. Paul's Cathedral. A true 'mould twin' to Great Paul, the connections between Portland and the City of London will be further cemented by naming the bell in honour of 'London's Leonardo', Robert Hooke, who first alerted the world to the possibility of extinction: the Hooke Bell for Biodiversity.

### bells for biodiversity

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



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

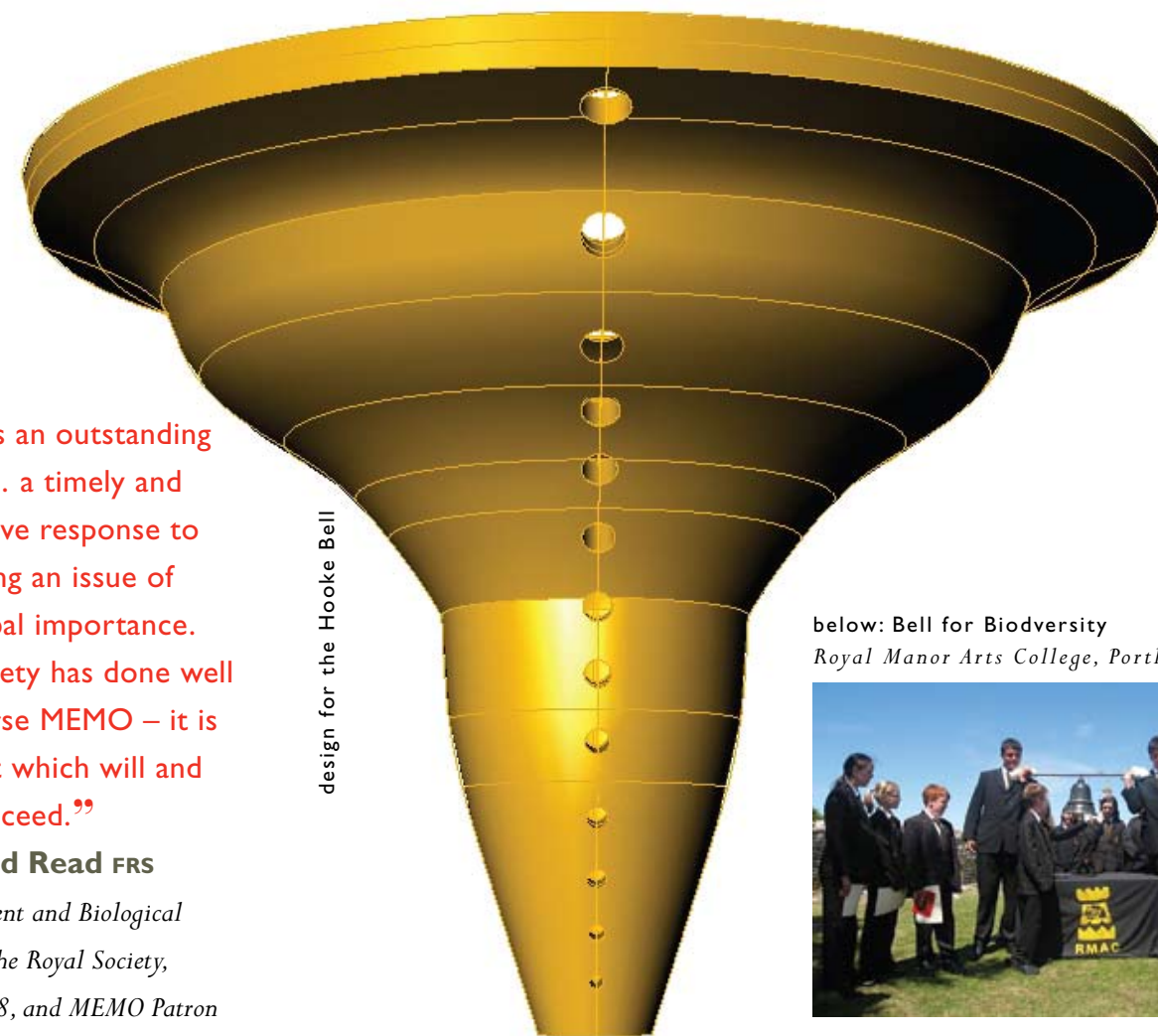
above below: Marcus Vergette's 28 maquettes for the Hooke Bell *Lyme Regis 2009*

“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*



design for the Hooke Bell

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



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.





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

# an olympic launch

We aim to have the Hooke Bell cast in time for a major launch event to coincide with the London Olympics. While the Jurassic Coast provides an international setting for MEMO, the Olympics provides an international moment.

The sailing events will take place below the site. To welcome the arrival of the bell we are planning a major gathering of sculptors from all over the world to create sculptures for the monument.

## 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 an Olympic launch in 2012, architectural planning and pre-construction project management. It will run to August 2012 and has a budget of £350,000.

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 £15-20 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 Estates on a 99-year lease for a peppercorn.

© Norman Lomax



In order to achieve Phase I, funding totaling £150,000 has been raised from Dorset County Council and numerous 'Founding Benefactors' with significant additional gifts in kind from members of the design team and others.

MEMO will be 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

The trustees are now actively seeking major grants and sponsorship partnerships for the £350,000 costs of the Phase II Olympic Launch and project development and construction planning, and the Phase III £15-20 million capital construction costs.

- 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

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 life is yet known.

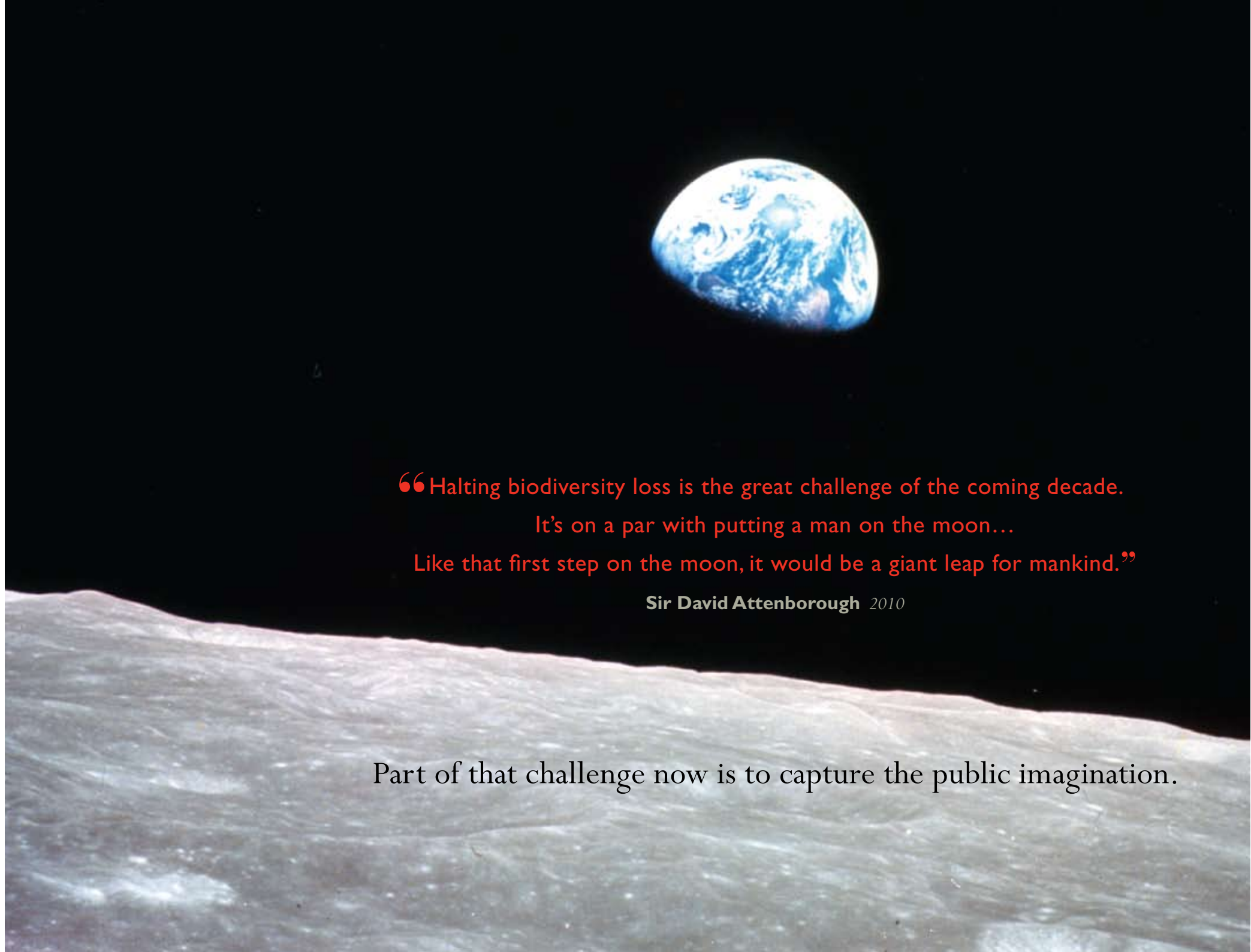
Fossils are also our only yardstick for the future. It is comparison with the fossil record which tells us that 860 species extinctions over 350 years is a radical acceleration from the natural rate.

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

“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

**royal patron**  
HRH The Duke of  
Edinburgh KG KT

**patrons**  
Professor E.O. Wilson FRS  
Professor James Lovelock  
FRS CH  
Lord May of Oxford  
PPRS OM

Professor Sir David Read  
FRS  
Field Marshall Sir John  
Chapple GCB CBE  
Philip Pullman CBE  
Sir Crispin Tickell GCMG  
KCVO

**trustees**  
Daniel Brooke  
Lord Brooke of Sutton  
Mandeville CH PC  
Dame Julia Cleverdon  
DCVO CBE  
Peter Cruttwell *Secretary  
and Treasurer*  
Richard Fortey FRS  
Peter Luff  
Michael Murphy  
Sir Ghilleain Prance FRS  
VHM *Chair*  
Maryann Woodrow

**design**  
Adjaye Associates  
*Architects*

endorsed by



ARUP *Engineering*  
Sebastian Brooke  
*Project Director*  
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**  
Albion Stone  
Crown Estates  
Dorset Wildlife Trust  
Dorset County Council  
Hay Literature Festival  
Jurassic Coast Earth Festival  
Jurassic Coast World  
Heritage Team  
Jurassic Coast Trust  
Living Planet Foundation  
Lyme Regis Development  
Trust  
Lyme Regis Fossil Festival  
Portland Gas Trust

Portland Community  
Partnership  
Portland Sculpture and  
Quarry Trust  
Revive Portland  
Royal Manor Arts College  
The Royal Society  
Stone Firms Ltd  
St. Mary-le-Bow  
St. Paul's Cathedral, Dean  
and Chapter  
St. Paul's Institute  
Take the Space Theatre  
Company  
Underhill Primary School  
UN Secretariat of the  
Convention on Biological  
Diversity  
Weymouth and Portland  
Borough Council  
Weymouth and Portland  
Partnership  
Weymouth College  
Wildlife Conservation  
Society  
Worshipful Company  
of Stonemasons  
Zoological Society  
of London

**volunteers**  
Tim Abberley  
Aosaf Afzal  
Les Ames  
Chris J Bailey

Rachel Barton  
Harry Brockway  
Beatrice Brooke  
Laurie Brooke  
Camilla Bustani  
Lorraine Camp  
Rob Coward  
John and Margaret Culley  
Chris Daniels  
Anthony Denman  
Katherine Dutton  
Alex Evans  
Susie Fenton  
Brian Green  
Ed Hall  
Shaun Hawker  
Adam Horowitz  
Paul Hyland  
Mark and Jo Jackson  
Mike and Wendy Kelly  
Tom Kenrick  
Nils Kulleseid  
Darren Lang  
Tim Lees  
Gareth Lewis  
Billy Lillywhite  
Paul Lister  
Norman Lomax  
Jim Lovell  
Nigel Miller  
Stuart Morris  
Jeremy Nichols

Tom Nichols  
Sarah Nichols  
Matt O'Donovan  
Richard Paisley  
Roy and Sandra Pepperell  
Jon and Sally Pepperell  
Jim Potter  
Simon Reid  
Liz Reissner  
John and Jean Sellman  
Linda Shannon  
Amy Shelton  
Gavin Shelton  
Callum Shone  
Sloan Smith  
Joanna Szulwalska  
John and Sue Thorner  
Hugh and Shirley Torrens  
Peter van Allen  
Emma and Adrian Vickers  
Nick Wheatley  
Andrew Whittle  
Will  
Alex Wood  
Emily Young



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 Stonemasons, the Weymouth and Portland Partnership and the generosity of our many Friends and Founding Benefactors. The support of both quarrying companies on Portland – Albion Stone and Stone Firms – has been crucial.

design: chris j bailey ©2011



www.memoproject.org  
mass extinction memorial observatory  
t: 01600 772788 e: info@memoproject.org  
Priory Mill, Nailer's Lane, Monmouth NP25 3EH

Mass Extinction Memorial Observatory Limited trading as MEMO  
registered charity no. 1122701 • registered in England company no. 06087344 • registered office: Priory Mill, Nailer's Lane, Monmouth NP25 3EH

“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



m e m o





m e m o

