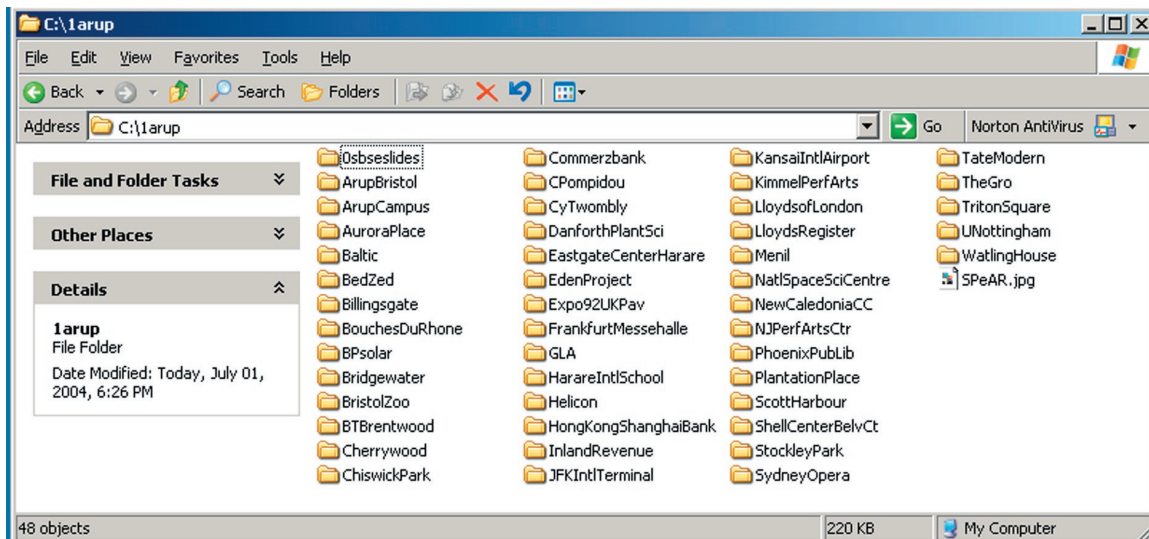




SBSE Visiting Scholar @ Arup


Arup—SBSE Teaching Resource CD

Brief. In consultation with the SBSE network, a large selection of Arup projects were chosen as exemplary buildings for teaching architectural design and technology topics. Through the generosity of Ove Arup and Partner's Research and Development Group, digital images from Arup's on-line photo library were accessed and appropriate images and information for each project chosen during a 2002–2003 sabbatical leave. Also included is Arup's SPEaR diagram which articulates the method the firm uses to evaluate projects for sustainability.



Each project is documented using text from Arup's database. Each slide is documented with a thumbnail, caption, date, filename, and photographic credit.

The information and slide index pages for each project (see example below) are in PDF format and included on the CD in the 0sbseslides folder.



THE EDEN PROJECT
ST AUSTELL, CORNWALL, ENGLAND

Client: The Eden Project Trust
 Architect: Nicholas Grimshaw & Partners
 Consulting Engineers: Ove Arup & Partners

Project feasibility was established using a financial model developed and appraised by Arup and using risk assessment techniques to forecast visitor numbers and cash flows. Arup also conducted traffic impact assessments and designed highway works. These evaluations were part of the trust's successful application to the Millennium Commission for grant funding.

Botanists, architects, and engineers worked together to create facilities large enough to exhibit and study a range of plants on a scale unprecedented anywhere in the world. Arup's principal role was as environmental engineer for the biomes, which range in span from 10m up to 100m, with clear internal heights of up to 45m. The building services were designed with sustainability in mind. The heating system's design is highly efficient. The heat requirements and temperature fluctuations were calculated using detailed computer models of the Cornish weather. Heating is introduced to the space via air jets at the perimeter of the biomes, supplemented at the widest sections by additional jets at high level. The jets serve two functions: the obvious one of introducing heat to the space and, in the case of the tropical biome, the more lateral purpose of stirring the tops of the trees to aid growth and carry the heat from the highest branches, simulating, in micro, the air movement of a real rainforest.

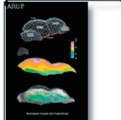
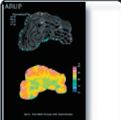
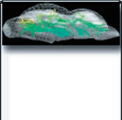
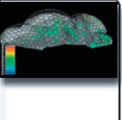








continued on page 17

Project Scope: One of the world's biggest-ever controlled environment projects was built on 30 hectares of reclaimed land in Cornwall. The site contained a 14-hectare, 70m deep, south-facing, dosed claypit. In and around this site were built 2.2 hectares of linked, climate-controlled transparent capsules (biomes) set in a designed landscape that comprise 26,000m² of botanical gardens. In 2001, two biomes (controlled environments in domes up to 60m high) were completed. Entrance to the biomes is by an orientation space created by gradually diminishing godesic structures. The Eden Project includes:

- Greenhouses
- Tourism development (expected to attract 750,000 visitors per year)
- Leisure centre
- Visitor's centre

continued on page 17

Slide source: Ove Arup & Partners -www.arup.com

 <p>CFD study summer warm air distribution in the Humid Tropics Biome</p> <p>Nov 2001 Job 50155_0.rpt</p>	 <p>CFD study winter warm air distribution in the Humid Tropics Biome</p> <p>Nov 2001 Job 50155_1.rpt</p>	 <p>CFD study summer air flow patterns in the Humid Tropics Biome</p> <p>Nov 2001 Job 50155_2.rpt</p>	 <p>CFD study particle traces showing air movement with temperature inside the biomes</p> <p>Nov 2001 Job 50155_3.rpt</p>
 <p>Visitor's Centre and site construction</p> <p>Oct 2000 Job 50155_4.rpt Geoff Farnham</p>	 <p>Visitor's Centre entry terrace</p> <p>Sep 2000 Job 50155_5.rpt Geoff Farnham</p>	 <p>Visitor's Centre and site construction</p> <p>Jul 2000 Job 50155_6.rpt Geoff Farnham</p>	 <p>Visitor's Centre and site construction</p> <p>Jul 2000 Job 50155_7.rpt Geoff Farnham</p>
 <p>Visitor's Centre and site construction</p> <p>Jul 2000 Job 50155_8.rpt Geoff Farnham</p>	 <p>Dome construction</p> <p>Aug 2000 Job 50155_9.rpt Geoff Farnham</p>	 <p>Dome rain gutter detail</p> <p>Aug 2000 Job 50155_10.rpt Geoff Farnham</p>	 <p>Dome construction</p> <p>Aug 2000 Job 50155_11.rpt Geoff Farnham</p>

The Eden Project 2

Outcome. The resultant CD is available for a nominal fee through the [SBSE Teaching Resources](#) web page for teaching use by university faculty worldwide.

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