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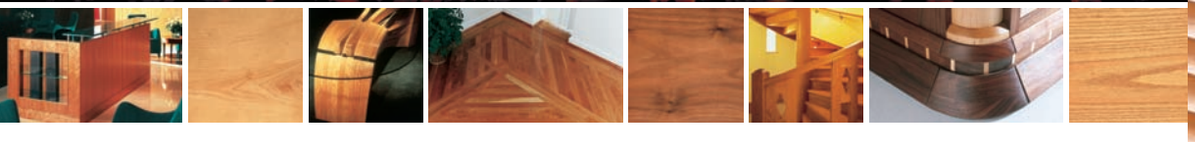

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1


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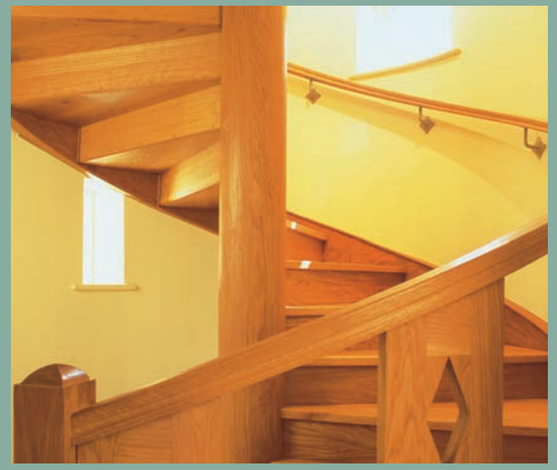
Introduction

For 100 years the forests of the Eastern United States have supplied hardwood for many applications across Europe. American hardwood's aesthetic characteristics and working properties are appreciated by craftsmen and architects, and many of the species such as white oak, hard maple, black cherry and black walnut are native only to North America.

This publication provides a snap-shot of the extent to which European architects, designers, engineers and clients are specifying American hardwood in modern, and often award-winning, contexts. The examples in the pages that follow demonstrate a wide variety of applications, from government buildings to car showrooms.

Today the USA is the largest producer of sawn hardwood in the world. Over the last 40 years its hardwood forests have become more productive and have increased in area and volume – a true measure of sustainable forest management. The American Hardwood Export Council (AHEC) hopes that this book will encourage an even wider use of this hardwood resource and will inspire readers to design with the confidence shown by the architects in these pages.



Further reading

The American Hardwood Expert Council (AHEC) continually updates technical guides which are available free of charge, in a wide range of European languages, on the web:

- **Species** provides a comprehensive description of the full range of commercially available species from the USA, most of which are widely stocked by British importers.
- **Products** explains more about American production of hardwood lumber, veneer, plywood, flooring, dimension and moulding products.
- **American Hardwood Lumber Grades** is a visual guide to the main grades, showing variations between species.
- **American Beauties** highlights three lesser used, but widely available species – red oak, soft maple and tulipwood.
- **American Hardwood Resources** gives information about the growth and sustainability of American hardwood forests.

Guide to American Hardwoods – a special pack, containing the **Species** and **Products** guides with eight wood samples, is available – only to architects.

Order online at www.ahec-europe.org
American Hardwood Export Council
3 St Michael's Alley
London EC3V 9DS

Contents

Opposite: Red oak (1), white oak (2) and oak in joinery.

This page: Award winning oak. Courtesy, Carpenters' Company.

Editor **Nicola Jackson**. Consultant editor **Michael Buckley**. Designer **Antonia Hodgman.**

A natural choice for architects

For many architects timber has long been the material of choice for floors, joinery, doors and interior finishes, at least in the residential market. True, it's not cheap, especially if you're specifying hardwood, but the aesthetic and performance gain invariably means that it's good value. As well as the obvious visual merits of American hardwoods, from Ash and Aspen to Willow and Walnut, they lend visual and physical warmth to interiors and offer an impressive versatility of use.

So what of the non-residential market? Hi-tech materials, particularly glass and steel, have hogged much of the limelight during the last few decades, but wood – which in truth never really went away – has been making a high profile comeback in public projects and commercial buildings. Lists of award-winning buildings frequently include those which have a significant timber component, from impressive structural frames to meticulously detailed interiors.

This publication profiles European projects as diverse as, among others, a car showroom, a museum, two government buildings and a library. They have all been completed since the new millennium and all stand testimony to the dramatic and diverse ways in which hardwood can be used. In each example we have shown how timber has had a humanising effect on public and work spaces, helping users of the buildings to feel more comfortable, both physically and psychologically.

Renzo Piano's three concert halls in Rome are lined with American black cherry, chosen for its good acoustic qualities, its pliability and beauty, while the entrance to the French Ministry of Finance uses pale maple. The Saab showroom in Gothenburg has a floor of red oak, an environmentally responsible choice given that the species represents 37% of the standing timber volume in the US hardwood forests. But it is white oak which dominates this selection of projects. While red oak is used more widely than its counterpart throughout the US, in Europe white oak is generally preferred due to its equally impressive performance in both interior and exterior applications.

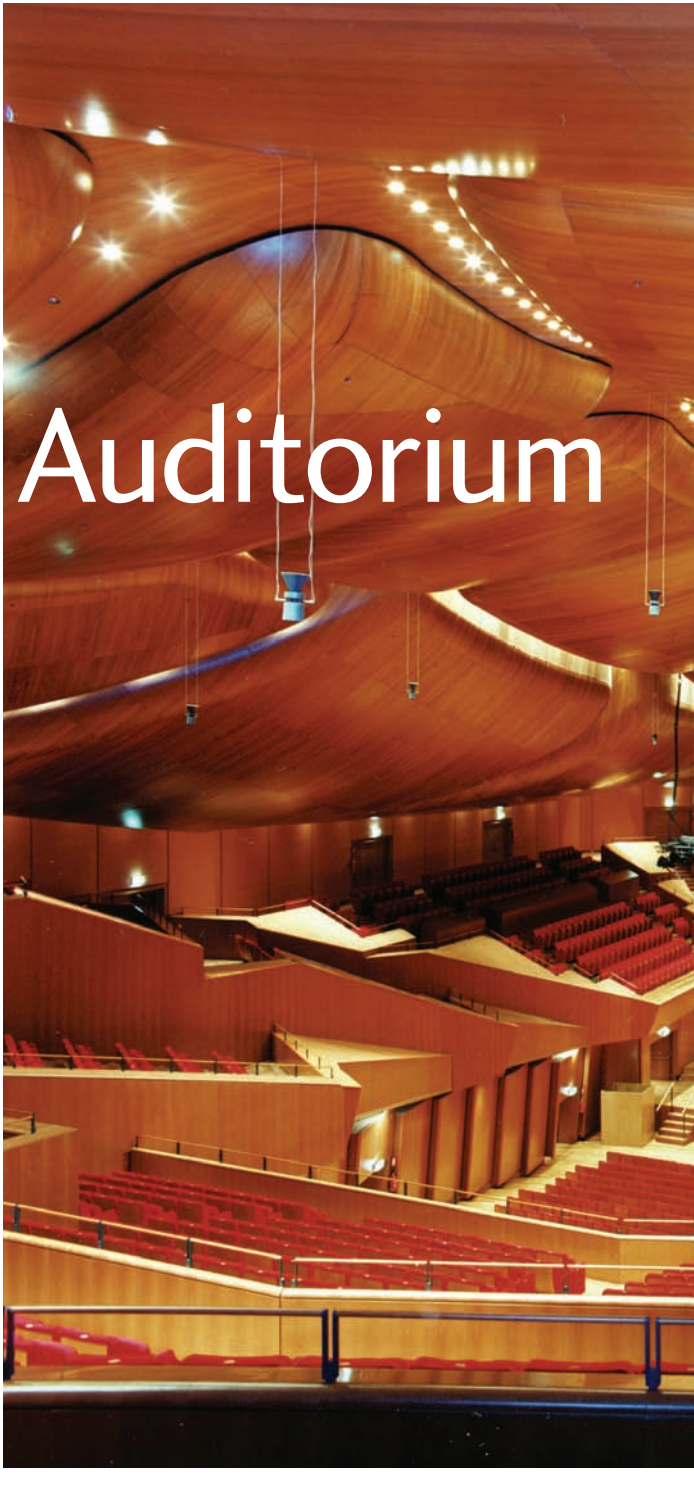
There were rumours, when Piano was designing his auditorium, that the authorities in Rome were originally opposed to the use of timber for their project. What worried them was deforestation, but once shown that the wood came from a sustainable source the architect was given the go-ahead. There is a lesson in this story; boycotting the use of wood in architecture is not going to help the cause of the forest. But supporting a well regulated, healthy industry – and steering clear of badly managed exporters and illegal trade – architects, and all those involved in construction, will be promoting healthy forests.

Nicola Jackson is a freelance architectural writer, and was editor of World Architecture (1996–2001).

Opposite: Uneven aged hardwood forest in the eastern USA. Above: Basswood (1), hard maple (2), tulipwood (3), red elm (4).

Species
American black cherry
Architect
Renzo Piano Building Workshop
Photography
Paolo Gherardi, courtesy of Ali Parquets

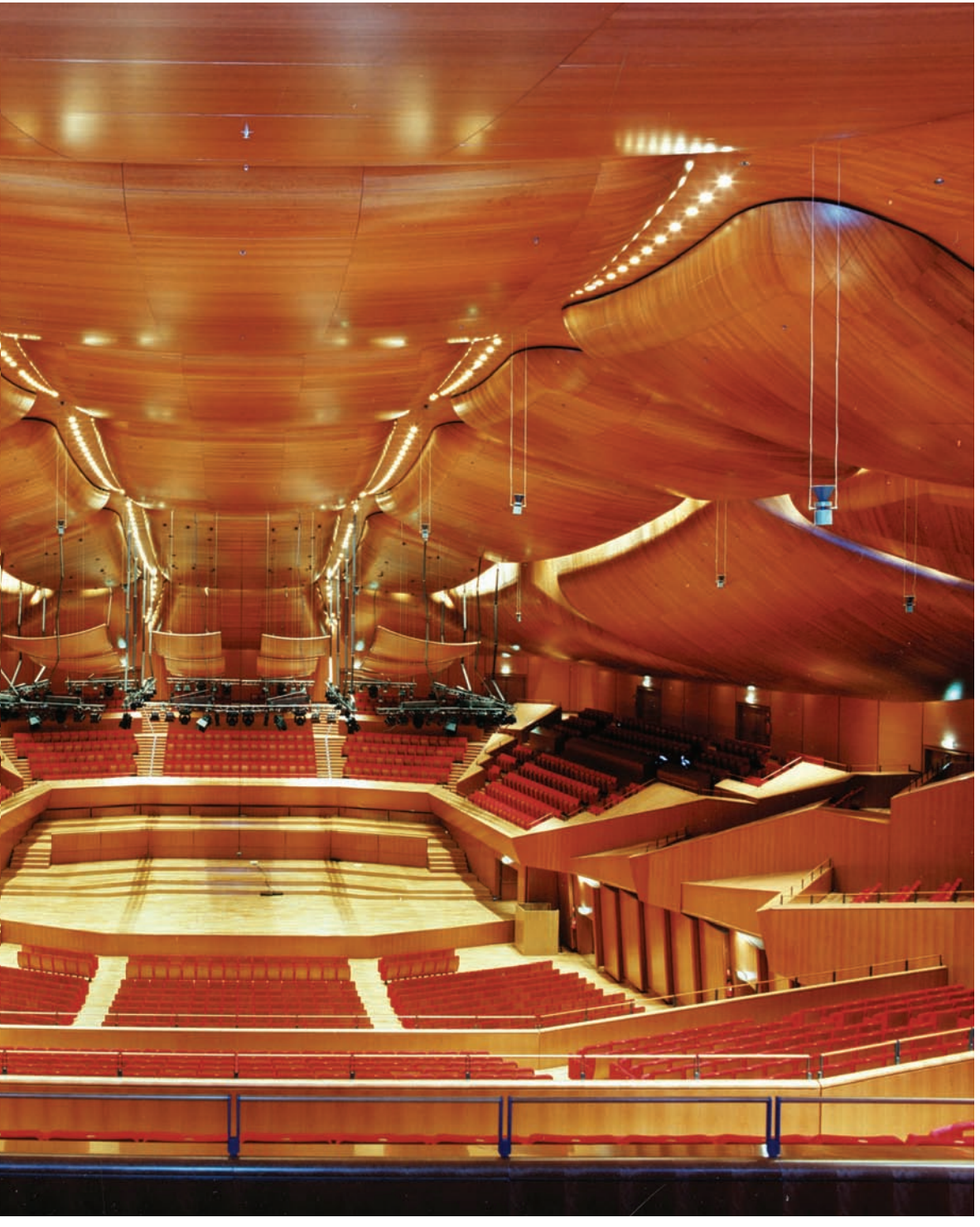
Rome Auditorium



At the end of 2002 Rome fulfilled its 60-year-old dream of building an international music venue. The work began in 1997 but took five long years to complete – partly because of the delicate archaeological nature of the excavation of the site. The foundations of a Roman villa, which were a surprise find, were incorporated into architect Renzo Piano's scheme, and are visible inside the underground foyer which provides access to the three concert halls.

The new venue is in the Flaminio district of Rome, near to the sports centre by Pier Luigi Nervi. The three halls, variously described as 'beetles' or 'upturned mandolins', are surrounded by a large green area which opens out into the amphitheatre. This is considered the fulcrum of the structure, and it can also be used as an additional open-air hall for shows and performances, with capacity for 3,000 people. It is known as the Parco della Musica and sits at the foot of Villa Glori, creating an effect reminiscent of the ruins in Piranesi's prints; a metaphor of classical antiquity. The individual halls have been designed for specific, independent purposes, as is reflected in their design.

Visitors to the centre will be struck by the majestic nature of the building but, as so often in Renzo Piano's recent works, also by the strong symbolic connotations of meaning. The shapes of the three halls are indeed similar to the sound boxes of three mandolins. Indirectly, it is like looking at a still life by Baschenis in which Villa Glori plays the part of Flemish-style vegetables, and the bridge building, which links the three main halls, that of the table with a linen table cloth.

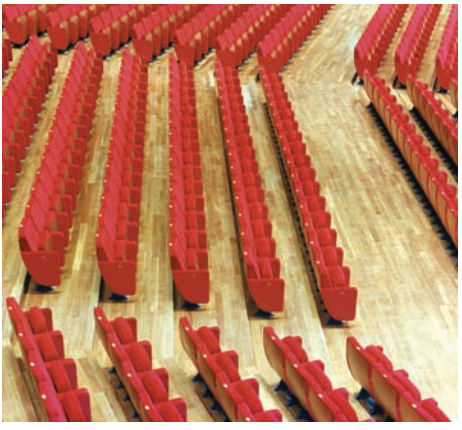


The choice of the materials also recalls and reinterprets the past. Terracotta, American cherry hardwood, lead and stone were specified, and the architect has exploited their various structural, ornamental and expressive potential. While the exterior plays on the organic nature of the sheet metal covered by the lead shell resting on the stone base and the greenery, internally Piano combines functional rationality and expressive poeticism.

Timber is used extensively inside the concert halls. The use of wood meets specific acoustic requirements and also promotes a cocooning environment. Here a 'soft' interior (in psychological but definitely not physical terms) is provided by the warmth of American cherry. This choice of material also addresses the need for a style which refers to the past to reintroduce sensations which have built up in time and in the collective memory.

Technology is visible but not overriding, almost as if to recapture that domestic aspect, which is a traditional feature of historical Italian theatres. The wooden structures of the Olympic Theatre in Vicenza or Farnese Theatre in Parma, effectively adopted by Piano in the new Niccolò Paganini auditorium built in the former Eridania sugar factory in the same city, are reinterpreted and improved upon here. However, a more precise reference is possibly to the interior of the Bibbiena Theatre in Mantua. The magic created by the warm colour of the stone and the system of mouldings and decorations is reinterpreted here in plain lines and a totally unadorned style. The same values are imparted through the highly expressive potential of the timber. In an interior with a truly minimalist appearance and strong technical content, Piano succeeds in reviving those values and that world of communication which we traditionally associate with a furnished interior or, much more frequently, a highly decorated interior.

The reinterpretation of historical precedents, while keeping in mind various stage-sets of the future, is effective. The single, warm colour of the cherry also creates visual continuity between the various surfaces of the box-like wall structure, eliminating the differences or breaks between floor, walls and ceiling, consequently expanding the space itself.



Above and left: Solid American black cherry flooring.

The choice of wood and the configuration of the various modules call to mind the visible hulls of many historical religious buildings, in which the mastery of the work was on a par with the qualities of the material. The panelling on the walls and ceilings also bear witness to the high quality of the technological detail and the impressive workmanship of the specialist builders, and the constant close assistance and supervision provided by the Renzo Piano Building Workshop.

Each hall is equipped with recording facilities and equipment, with 19 rehearsal rooms of various sizes, while all the facilities of the auditorium are designed to a music centre blueprint. In particular the two recording rooms are designed for excellent acoustic qualities – thanks to the use of mobile elements and acoustic screens, which enable the reverberation times to be adjusted. The acoustics adviser to Piano's architecture studio, Helmut Muller, had already worked on the architect's Lingotto project.

The use of wood provides the perfect acoustic and aesthetic qualities for music-making. American black cherry has good acoustic properties, but it was also specified because it is so tough and easy to manipulate. It's a predictable timber; pliable, resistant to decay and very beautiful.

By Professor Arturo Dell'Acqua Bellavitis.

French Ministry of Finance Paris

Laurent Boudrillet, an associate with C+H+ (set up by Paul Chemetov and Borja Huidobro) talks to Michael Buckley about his attitude to using wood in modern buildings. Boudrillet was commended for his use of American hard maple in the Bibliothèque de Montpellier, completed in 1999. Now he has introduced hard maple once more to soften entrances of the two main buildings for the French Ministry of Finance, established on the site of the old tobacco factory of the monopoly SEITA – shades of the quintessential Gauloise and Gitane.

In the new Ministry of Finance buildings, why have you limited solid maple joinery and veneered panels to the entrances?

On this project, American maple has been used for veneered panels on the walls of the entrances of the two buildings (200 and 150 square metres each). We have also used it for boxes surrounding the air conditioning vents in the offices as well as for the lift entrances. We used solid maple joinery for shelves.

Nevertheless, we could not, for example, use it for the doors, which we would have liked, due to budget constraints. In most projects of this kind the budget allocated means that we have to use wood sparingly. Quite often, we keep American maple for rooms needing a special acoustic treatment.

Left: Amercian hard-wood art for the foyer. Opposite below: Hard maple vents give visual warmth.

Species
American hard maple
Architect
Laurent Boudrillet of Chemetov (C+H+)
Photography
Tessa Musgrave

Are you required to specify sustainable hardwood for public buildings in France?

In public buildings for instance there is no law as such but we do have guidelines to encourage the use of sustainable materials. We have regulations relating to the use of materials and designs to limit energy use and the recycling of materials at the end of a product's life. In this type of project, this HQE label (High Environmental Quality) is considered a plus. In Eastern France, for example, it's required in all specifications.

What we call the RT 2000 (thermal regulation law) also compels us to use more wood in building because of flooring thermal insulation. Even if costs are higher, in return energy savings are important. Besides, the question of sustainable forests is essential, wood being used in so many ways: solid, panels, structure, boarding and so on.

How do you know that American hardwood is sustainable?

That's simple. It seems to me that the forests of Europe and America, including Canada, are increasing; whereas the reverse seems to be the case in Africa and Asia.

Why did you choose maple here in Pantin and for the library in Montpellier?

In both these cases we were looking for a light coloured clear wood with an interesting grain characteristic and we liked the pink tinge. When you advise using wood, you may be sure users will appreciate it. In public buildings in general, people working there are very receptive to wood. I observe that people in offices like wood around them in their working environment. They are comfortable with wood, and when we suggest it they never refuse.

In the case of the Ministry project the ceilings are high and the building is aesthetically cold. So the use of wood around the ceiling air conditioning units gave important visual warmth.

Which other architects have inspired you to use hardwood?

Many Spanish architects have been influential. I also admire Swiss architects, such as Peter Zumthor, who make great use of wood in architecture.

The Salamanca Scenic Arts Centre

Species

American white oak

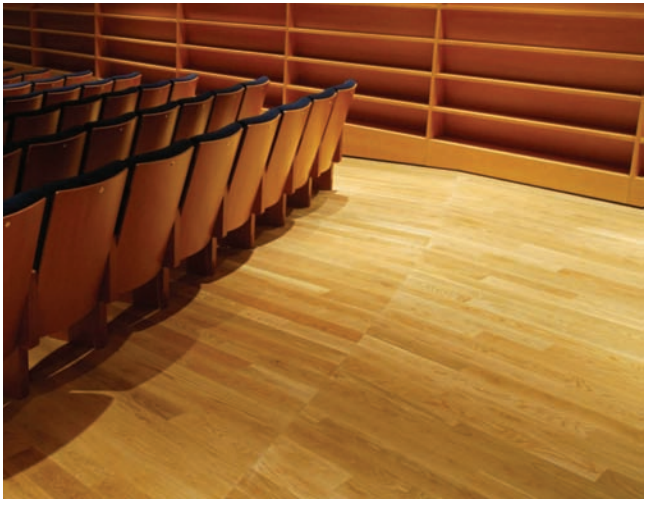
Architect

Mariano Bayón Alvarez

Situated about 100 miles north-west of the capital, Madrid, Salamanca is Spain's most graceful city. For 400 years, until the 17th century, Salamanca was home to one of the most prestigious universities in the world. Even today this academic and cultural history seems to seep from the golden sandstone out of which most of the city is built. The suburban concrete that blights much of the rest of Spain has been kept away from Salamanca. As a result of this rich architectural heritage, architects who are lucky enough to be given the rare opportunity to build in the city are all too aware of the enormity of their task.

In July 2002 the new Scenic Arts Centre opened its doors. Architect Mariano Bayón is confident that his new building lives up to the example set by its ancestors. "It is a strong building that dominates the new urban scene, providing a new order that will restructure the future image of this emblematic place and its surroundings, like a new cultural forum." He might have added that one of the strongest aesthetic and environmental qualities of his building is its choice of materials. Stone is used throughout, and inside another natural material is used to great effect: American white oak.

Opposite and below: American white oak is often the species of choice for flooring in Spain, here chosen for its resistance to high traffic.

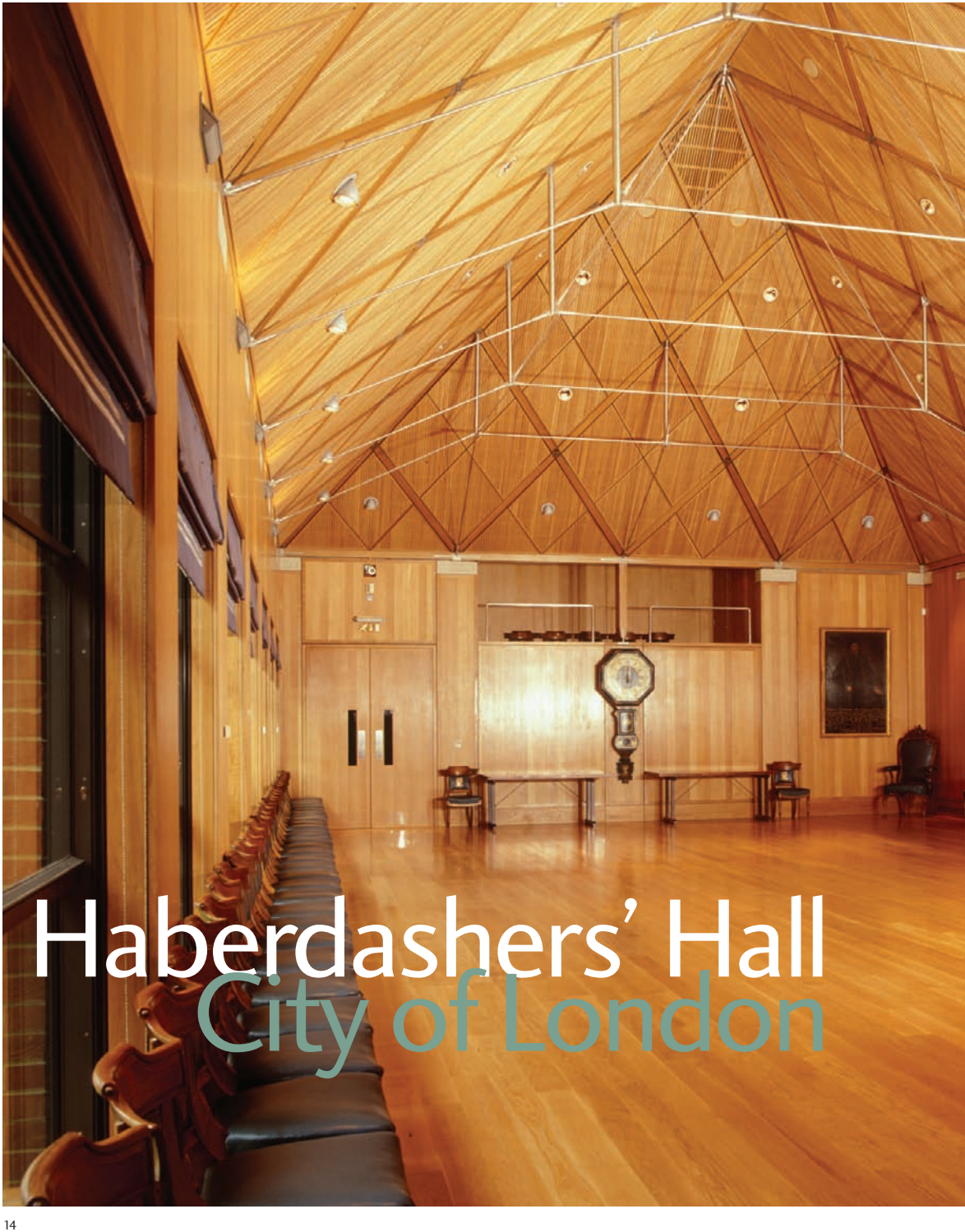


The image of the building is that of a huge rock which paradoxically has lightness and appears to levitate; a building in which stone has a non-structural role despite the extent of its application. Metal staves divide the façade into great blocks and support the stone, freeing ample areas for glazing. Shows being performed within the building are also viewed from the outside, making this a public building in the truest sense.

The interior is a rising chain of foyers and lobbies of varying size. It starts with an exterior covered atrium in front of the main entrance which leads into the cafeteria (connected with the upper market) and the shop and ticket offices.

The main vestibule gives access to the semicircular theatre which seats an audience of 1,244. It is equipped with the latest technology and can accommodate all types of show on its impressive stage. At 33m wide, 17m deep and 27m high it is the size of a nine-floor building. The proscenium arch, 19.50m wide and 9.45m high, is one of the largest constructed in Spain in recent years.

The removable seats in the theatre sit on American white oak flooring. Spain is the foremost European country in which this timber is used. It is often specified because of its tolerance to the strong light. In this case it has been chosen because of its durability and resistance to high traffic. Its resilience was a priority given that the seats are only fixed in the back rows and the rest can be moved to suit multiple configurations of the theatre. **By Carlos Kasner.**



Haberdashers' Hall
City of London

Species
American white oak
Architect
Michael Hopkins & Partners
Photography
Tessa Musgrave

Left: White oak flooring, panels and ceiling of the livery hall.

Charity dinners and after-dinner speeches are as essential to the modern-day Haberdashers' Company as ribbons and gloves were when it was founded in the 15th century. So it is appropriate that Haberdashers' Hall, which opened in 2002 near Smithfield market, should be dedicated to the formal reception.

Michael Hopkins and Partners' building provides a formal spatial experience for guests as they make their way through a series of passageways and rooms to the ultimate space, the livery hall. This is not just where the main business of the building takes place, but the basis of its plan and its centrepiece – a timber and steel roof.

The hall's rigorous geometric proportions were derived in the first instance from the space required to seat 190 guests at tables arranged in the traditional E-shape. The length of the hall – 20m – dictated the dimension of the square courtyard around which runs a 5m wide band of rooms, accommodating an office and flat for the beadle, a reception gallery and adjoining meeting rooms.

But the geometry had to be imposed on what was originally a chaotic urban block. Hopkins demolished the rear of the largest building on the site, a former warehouse, creating space for the new hall but leaving enough of the old building to accommodate 65 residential units. This gave the hall its own elevation and created the secluded courtyard, while barely disturbing the Smithfield frontages that act as a buffer to the hall.

At first all that is visible of the hall is a glimpse across the courtyard through a low passageway leading from the street. Guests are taken through a loggia to an entrance flanked by a grand spiral staircase. An orangery, complete with young citrus trees, opens onto the courtyard for evening receptions, while the staircase leads up to the main function rooms on the first floor.

From outside, the building is awkward and the proportions unsettling. A lead roof of over-sized diamond shapes bears down on relatively slender brick piers. But inside the detailing and proportions are elegant and human in scale.

The palette of materials was limited to timber, handmade brick, precast concrete, York stone and stainless steel. American white oak is used in a variety of ways: to form a non-loadbearing screen of planks around the

Clockwise from far right: Assembly passage, courtyard cloister, function rooms, livery hall ceiling.

ground-floor offices, as veneered panels in the reception gallery and hall and as a laminate to the structural glulam roof trusses.

The original plan had been to use English oak but Hopkins was advised that stocks were running low (one project architect half-jokes that the practice used it all up at Portcullis House). The 'best value' alternative was American white oak, which, says Hopkins director Jim Greaves, is a 'very consistent product'.

Initially, the Haberdashers' Company had been keen to reuse the varnished panelling from its previous premises, a hall built in the 1950s, but this was ruled out for stylistic reasons. For Greaves, the connotations of timber vary enormously. 'We used solid wooden boards at Emmanuel College [Cambridge] but for Haberdashers we felt that would be too rustic,' he explains. 'Here it's rooted in the way Louis Kahn used timber at the Yale Center for British Art [New Haven], as a way of achieving a surface that has a lot of interest.'

Timber also provided a direct link with the Haberdashers' first livery hall, built in the City of London in the mid-15th century. Parallels with the medieval timber-panelled hall are reinforced by a mezzanine gallery and blue silk blinds (designed by Patty Hopkins). But where Hopkins' design departs from tradition is in the use of stainless steel ties as bracing elements for the roof structure as opposed to hammer-beam trusses.

With typical savvy, engineer Arup has come up with a technical term for the structure – a 'braced diagrid' – although Greaves says the only element that is actually new is the glue used to bond the timber rafters to their stainless steel shoes. At each intersection of the lattice, four of these shoes are bolted to a stainless steel node that in turn connects to steel ties that brace the structure. The result is a delicate web of structure that leaves the space open, rather than crowded with criss-crossing beams, and the impression is of a series of lightly touching patterned surfaces like the lid of a beautiful box.

By Vicky Richardson, first published in RIBA Journal Hardwood supplement.

German Bundestag Berlin

The new offices for the German Bundestag in Berlin are innovative in their design and effectively combine old and new. The use of high quality long lasting building materials is the common denominator between the offices and the adjoining Reichstag. Known as "Jacob Kaiser House", the new offices comprise 3,000 rooms, accommodating 2,200 employees of the German parliament, which was opened in 2002 by Wolfgang Thierse, President of the Bundestag. The project had a total budget of US$500 million and took over seven years to complete from the initial planning stage.

The creation of this new block of eight office buildings lining either side of Dorotheen Strasse was, like the coalition Government it houses, a collaborative effort. Five architectural practices – Schweger & Partner (Hamburg), Busmann & Haberer (Cologne), von Gerkan, Marg & Partner (Hamburg), De Architekten Cie (Amsterdam) and van den Valentyn (Cologne) – were each responsible for one or more buildings, but worked together to produce a masterplan for the whole project. Although the end result from the outside appears to be a collection of eight individual buildings, from the inside one is given the impression of a single complex. This is achieved in two ways; firstly by a series of walkways, bridges and corridors that connect the different sections and secondly by adopting a common theme to the design of the interior atrium space. However, each section reflects the individual style of its architect.

It is the extensive use of temperate hardwoods throughout the interiors that is the most obvious theme linking all sections. The three main hardwoods used were American maple, American oak and European birch. American white oak joinery was used for much of the interior office doors, frames and windows interspersed with hard maple veneer panelling in one section and Finnish birch in others. Such choice of light coloured wood helps to create a feeling of light and space in the internal courtyards and corridors. In the section designed by De Architekten Cie the white oak joinery has been stained dark to provide a contrast to the hard maple, whereas Schweger & Partner used a natural lacquered finish on the oak to blend into the adjacent birch panels. According to Nils Hartenstein, the project architect for Schweger & Partner, "the decision by all the architects involved to use a lot of hardwood has helped to create a sense of warmth and comfort to the interior – an important criteria for the occupants, many of whom work long hours. We believe that the American white oak provides a texture, colour and quality for the joinery that we could not have achieved with European oak".

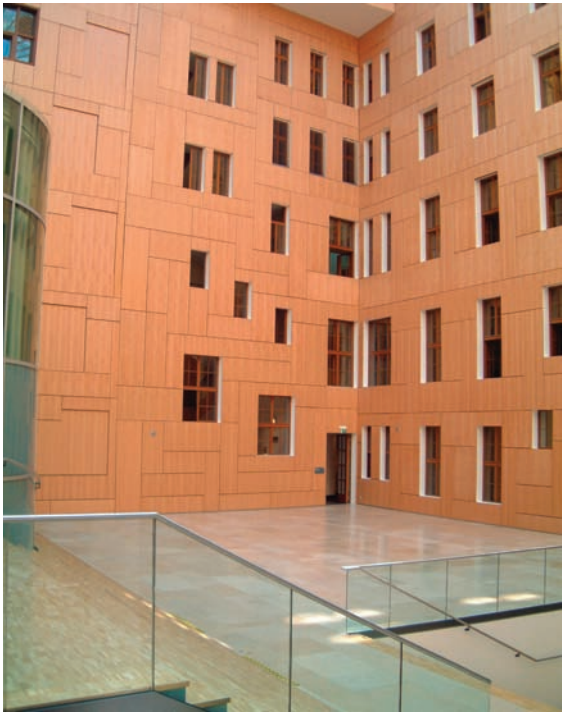
The international flavour of this new German centre of administration has drawn heavily on nature in its warmest and lightest form, and stands as a fine example of combining the old and the new, both inside and out, with materials from the most appropriate sources. Hardwood got the vote of the designers, and their client, in one of Europe's most environmentally conscious societies. **By David Venables, AHEC**

Species
American white oak, American maple and European birch

Architect
Schweger & Partner, Busmann & Haberer, von Gerkan, Marg & Partner, De Architekten Cie, van den Valentyn

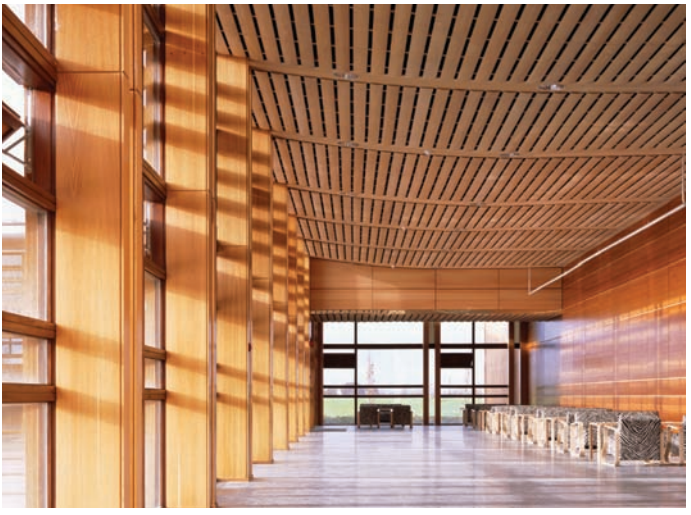
Photography
David Venables

Below: the Reichstag. Opposite: The new Bundestag buildings in Berlin.




EU Veterinary Office

Ireland



Above: Space to relax.
Left: Dining in the light.

Species

American white oak, ash, black cherry, basswood & hard maple

Architect

Ciaran O'Connor, Office of Public Works

Awards

- **RIAI Regional Award**
- **National Trust in Ireland Awards**
- **Irish Joinery Awards**

Photography

Dennis Gilbert/VIEW

The European Commission's new Food and Veterinary Office in Ireland is causing quite a stir amongst the design community. Featured in all the leading professional architectural journals in Ireland and the UK since it was opened in 2002, it has gone on to win no fewer than three design awards: The Royal Institute of Architects in Ireland – Regional Award; The National Trust in Ireland – Sustainable Building of the Year Award; The Irish Joinery Awards – Regional Award.

The building has been described as "a true monument to the modern use of hardwood", which is heartening in an era when the environmental confrontation of a decade left many architects nervous of the specification of hardwoods. The EU vet centre is helping to change that as a veritable union of environmentally sound design and materials in which 98% of the materials in this 13,500 square-metre building are also reusable or recyclable. The extensive use of hardwoods inside and out meets today's high standards of energy efficiency and sustainability.

Ciaran O'Connor, who led the design team from the Office of Public Works in Ireland, has earned himself a reputation for green design as a winner of the All-Ireland Landscape Award, the Ford Foundation Conservation Award and the Europa Nostra Medal, amongst others. For him the specification of timber was a natural choice. His aim for the 10 hectare green-field site outside Dublin, was to achieve a structure in harmony with its surroundings.

Above: White oak frames and doors.
Right: A wood fest inside and out.

American white oak cladding interlaced with iroko (African hardwood) louvres to shield the glazing from the sun make up the external two-storey façade. The exterior walls are constructed in two skins; a 215mm block wall and an external façade of 25mm oak tongue-and-groove boards. In between the two layers are timber slats and insulation, specified to Scandinavian standards. All the external boarding, which is thicker than the norm to alleviate distortion over time, was cut and prepared off-site to minimise waste and maximise the efficiency of the fire and weather treatments.

Twenty containers of American white oak and two containers of American ash were used, much of it machined and installed by O'Neill Bros, Master Joiners of Londonderry. The American white oak was supplied tongued and grooved and kiln dried by Smee Timber to non-standard 14-16% moisture content (normally 8-10%) for external use in the Irish climate, as specified by O'Connor. Two containers of American ash were also supplied as rough sawn to Swift Horsman of Ware in Hertfordshire for production of specialised curved ash ceiling panels, and then supplied to McNamara Ltd, the main contractor for installation.

A combination of American, European and tropical hardwoods dress the interior. Timber-clad walls line the wide corridors, and ceilings are constructed from slatted American ash. Cellular offices are equipped with doors inlaid with American, European and tropical veneers and slatted hardwood radiator screens. Louvred roof lights and motorised blinds in the two conference/meeting rooms are used to control natural light. The walls, lined in quarter-sawn, beech-veneered panels are separated by strips of American cherry.

The highlight of this wood-fest is the dining room, an unusually light, calm room at the centre of the building. The oak block floor is a far cry from the lino or concrete of most office canteens, and roof lights in an open coffered section of the American ash pleated ceiling take the place of flickering strip lighting. The walls are large windows framed in American oak which look out on to a courtyard, at the centre of the complex, and a terrace. The maple dining tables were designed by O'Connor. If ever there was an example of how to design with sustainable hardwoods, this is it.
By Michael Buckley.

Saab showroom Gothenburg

Species
American red oak
Architect
Erik Stigmar at Saab
Photography
J Sommar + Co

Hardwood flooring is gaining popularity the world over. In Scandinavia this should come as no surprise given the prevalence of wood in their natural surroundings. However, to have hardwood flooring in a car showroom, wherever that might be, is bound to provoke admiring glances from the customers. This has been the experience of Saab. The Swedish car manufacturer has recently adopted American red oak as the new look for its showrooms across Scandinavia and in the UK. Ultimately, 96 showrooms in the UK will be fitted with fixed width, fixed length, butt jointed, red oak plank flooring. And Saab sales staff in those showrooms already fitted with new floors are noticing the difference.

The large, often anonymous, surroundings of a car showroom is immediately softened and upgraded through the use of timber. From a practical point of view staff are feeling the physical benefits when they're on their feet all day. The decision to go with timber as an integral part of the new look for these showrooms came from Saab's architect in Sweden. Blending elegantly with steel and glass, the warm red oak tones inject a luxurious and comfortable feel to an otherwise stark environment, promoting an air of sophistication and contemporary styling. The floors retain lots of natural colour variation and character marks as requested by the client.

American red oak is an environmentally sound choice on the part of Saab. The most abundant of all eastern United States hardwoods, and the preferred species for furniture, flooring and internal joinery in the US domestic market, American red oak represents 37% of the standing timber volume of all hardwoods in the US hardwood forests. Red and white oak together represent approximately 50% of all US hardwood lumber production. The name red oak may be misleading as it refers to the leaf colour, rather than the timber. It can in practice be difficult to discern red oak from white oak. In terms of working properties both red and white oak are easy to turn, sand well and offer excellent machining. The only significant difference between the two species worthy of particular note is the porosity of red oak rendering it unsuitable for external joinery, but for internal flooring that's no problem.

Red oak is generally under-utilised in Europe, a marketplace traditionally dominated by American white oak and European oak. Red oak is one subject of the American Hardwood Export Council's publication "American Beauties – profiles on soft maple, tulipwood and red oak". And being so suitable for flooring, American red oak offers a combination of warmth and tradition in many settings. Its selection by Saab stands as a testament to its practicality and aesthetic qualities, and explains its popularity as a staple for the US domestic flooring market. **By Elizabeth Leigh.**

Ashmolean Museum Oxford

The harmony of hardwood and works of art struck a chord in Oxford when Van Heyningen and Hayward architects designed the new Khoan and Michael Sullivan Gallery of Chinese painting at the Ashmolean Musem in Oxford. In judging this installation overall winner of the Timber Industry Awards in 2001, the assessors considered that the dark tones of the American black walnut formed a perfect foil for the illuminated cabinets, and virtually eliminated the usual problems of reflection. 'The design has a spare elegance, combined with the highest standards of workmanship', said the judges.

The delicate Chinese scroll paintings, some of which are over 3m long, are housed in an independent narrow space adjacent to other Chinese galleries. Black walnut was also used for the joinery and flooring, for its colour and grain. The wall linings are formed from profiled boards with a series of fine grooves, creating a varying play of light while softening acoustic reflections and providing secret access to display cases and services.

American black walnut is one of the more highly prized hardwood species in North America, but is more widely available than its European cousin. These days it is also much sought after in China itself and is regarded as an exotic hardwood in a modern idiom. Here in Oxford it fulfils all the criteria required for the display of the Chinese scrolls. **By Michael Buckley.**

Species

American black walnut

Architect

Van Heyningen and Hayward

Awards

Timber Industry, UK

Walnut formed a perfect foil for the illuminated cabinets.

Public library Montpellier

Montpellier's new €14 million public library by French architect C+H+ was opened in 2000. The project's brief had two major requirements. The first was that it should be bright and provide maximum natural light without overheating in the Southern French summer. The second was that future maintenance costs should be kept as low as possible. To meet these requirements, the project has been designed with two quite different faces. The south-facing section is a concrete volume with very few openings. It creates a sunscreen and protects the bookshelves. In contrast, the north-facing section is transparent and houses most of the well-lit reading rooms. As visitors to the library move up through the building the greater is the availability of reading areas for specialist researchers.

Throughout the public areas materials such as steel, glass and hardwood have been specified to keep maintenance costs low. The timber used is American hard maple and birch. 'We were seeking a light [coloured] species that wouldn't fade with time, given the intense sunlight here. We first thought of beech, but found it wasn't light enough', comments Laurent Boudrillet, the architect in charge of the project. 'Moreover, its colour variation cannot always be controlled'.

American hard maple is in a similar price bracket to French beech and offered two great assets: lighter colour and better weathering over time. Its grain pattern is larger than beech and it therefore creates a more harmonious effect. Both the walls and ceilings of every reading room in the library have been fitted with maple panelling. Some areas, such as the first floor multiple-purpose room and the auditorium, have also been fitted with birch. The architect wanted to maintain the bright, luminous atmosphere and provide a visual link with the other rooms. With its light, slightly pinkish hues, the birch met with the architect's specifications.

American maple veneer has been used in the 'island of tales' reading room and the research areas. The reception counters are made of solid maple, whereas the birch was installed as veneer. Whether for facing or structural purposes, both hardwood species have been associated with steel and glass. Against steel, American maple brings warmth and contrast to the structural elements. When associated with glass, it creates two types of visual effects: on the northern façade, maple heightens the effect of volume and brings a steady, constant brightness; inside the library, it creates a visual link between the different reading rooms.

Laurent Boudrillet is fully satisfied with his choice. What convinced him to go for American hardwood, apart from the fact that the American hardwood producers were the only suppliers to offer maple veneer, is their rigorous grading system. 'We achieved cost efficiency, and with the availability, the deadlines were met.'

By Isabelle Guitet.

Species

American hard maple and birch

Architect

Laurent Boudrillet of Chemetov (C+H+)

Photography

Claude O'Sughrue

Below: Extensive use of maple within the library.
Opposite: Birch panelling for the auditorium


DVAG
Hamburg

V-block, left, interlocks with C-block, right.

Species
American black cherry
Architect
BRT Architekten
Photography
Jörg Hempel

The essential idea behind BRT Architekten's design for the prototype for DVAG's training centres throughout Germany is the development of a light, transparent and friendly building, embodying the characteristics of an open, communicative institution.

A suspended ground floor and the filigree, transparent façade create interior spaces flooded with light. The materials used pick up on the central theme for the building. Timber, glass and plaster dominate. The interior fittings have been consciously developed to contrast with the hi-tech exterior. The interior is strongly defined by patterned wooden materials. American black cherry was specified to lend warmth to the interior. Black cherry has been laid over large areas of the floor, in the form of cross-grained wood or laminated parquet. The floor surfaces have been laid with an oiled and waxed finish.

The training centre is divided into two interlocking blocks; a C-ring and V-block. The timber wall panelling and doors in both blocks are clad in black cherry. The dominant vertical slats in the exterior façade of the V-block are picked up in wooden form to reflect a "house within a house" theme. The slats can be turned about their central axis and can be used to shade the hall, and to regulate acoustics and light. **By Nicola Jackson.**

Portcullis House
London

The New Parliamentary Building in Westminster, known as Portcullis House, by Michael Hopkins and Partners, was completed in 2000. The six-storey rectangular block occupies one of the most prominent sites in Westminster. It houses accommodation for 210 Members of Parliament and a suite of publicly accessible Select Committee Rooms. Catering facilities and a library open onto a central courtyard which has an innovative glass roof with a diagonal lattice structure of laminated white oak. It is one of the most complex timber roof structures in Europe and was central to the architect's goal of providing a focal point to the building, protected from weather and glare and with maximum use of natural light.

Originally the atrium roof was conceived as a steel structure but the architects chose a traditional material to reflect the character of the nearby Palace of Westminster where oak is extensively used in such structures as the hammer-beam roof of Westminster Hall. The atrium roof of Portcullis House represented one of many challenges presented to structural engineer Arup. It is supported on only six columns and is based on a system of node joints and glass panels with a consistent curvature. American white oak provided the engineers with the strength to weight ratio that satisfied their desire to keep the individual struts to a minimum mass.

The New Parliamentary Building has won numerous engineering and design awards, including the Timber Industry Award in 2001. The judges commended the 'lightness and elegance' of the 'stunning central space'. **By Michael Buckley.**

MICHAEL BUCKLEY

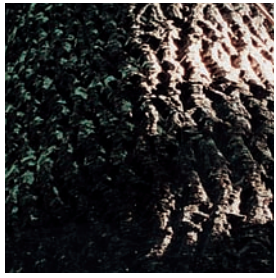
Species
American white oak

Architect
Michael Hopkins & Partners

Awards
Timber Industry

Photography
Peter Ross, Arup

Opposite and right:
Atrium roof detail.

Environmental Credentials

When specifying hardwood it is critical to be able to defend its environmental credentials and ensure that the wood is coming from a well regarded supplier. These facts should do much of the convincing for you:

- Over the last 50 years, the inventory of hardwoods standing in US forests increased by over 90% as harvesting levels remained well below the level of growth. The US hardwood inventory now stands at around 10,000 million m^3 and is growing at a rate of over 200 million m^3 per year (before harvesting).
- American hardwoods derive from managed natural forests which have high natural bio-diversity, provide a habitat for a wide range of species, and are very resilient to fire and pests. The Food and Agriculture Organisation (FAO) indicates that overall hardwood forests are getting older in the US and that this maturation is leading to increased eco-system diversity.
- Fertile forest soils and favourable growing conditions in the US mean that hardwood forests are most effectively renewed through natural regeneration. Selection harvesting, involving the removal of specified individuals or small groups of trees, is typical in American hardwood forests which offer a greater diversity of timber species than any other temperate hardwood forest resource. At a time when there is a trend towards relatively uniform plantation woods in many parts of the world, American hardwoods continue to offer all the variety and decorative advantages of natural forest woods.
- Over the last 50 years throughout the US there has been a 39% increase in the amount of wood and paper products produced per cubic metre of wood input. The application of a set of internationally recognised grading rules, established more than 100 years ago by the National Hardwood Lumber Association (NHLA), has made a major contribution to waste-minimisation in the American hardwood lumber sector.
- The US operates an effective and enforced regulatory framework to deliver sustainable forest management. The US approach to forest regulation is adapted to a national forest environment with a large private industry sector, a very long history of private forest management, and a strong civil society.
- Around 73% of hardwood forest land in the eastern US is privately owned, often by families whose ownership stretches back several generations. There are approximately 4 million private forest owners with an average lot size of 50 acres. The hardwood processing industry owns only 11% of the eastern US hardwood resource, with the balance of 16% owned by Federal and State Governments.
- All forest owners in the US are subject to Federal legislation designed to protect habitats for threatened species. Regulations affecting other aspects of forest management on private land are the responsibility of individual states. FAO reports that these regulations have been increasing overall. Some 44 States now have best management practice legislation intended to promote better management of forest lands.

And if that doesn't convince you just take a look at **www.sustainablehardwoods.info**