



American Hardwoods in Design



“With his materials the architect can do whatever the masters have done with pigments or with sound – in shadings as subtle, with combinations as expressive – perhaps outlasting himself. Wood is universally beautiful to man. It is the most humanly intimate of all materials.”

Frank Lloyd Wright

**Humans are like hardwood trees in three significant
and profound ways**

They are mostly water

They have a peak life span of about 80 years

THEY ARE ALL UNIQUE

Hardwoods

Hardwood is the wood from broadleaf trees (angiosperms). This is an American maple (*Acer* spp.)



Softwoods

Softwood is from coniferous or cone bearing trees (gymnosperms). Softwood does not necessarily refer to the hardness of the wood. These trees are also known as “evergreens”.



How we once managed our forests















The same forests today



A genuinely sustainable resource

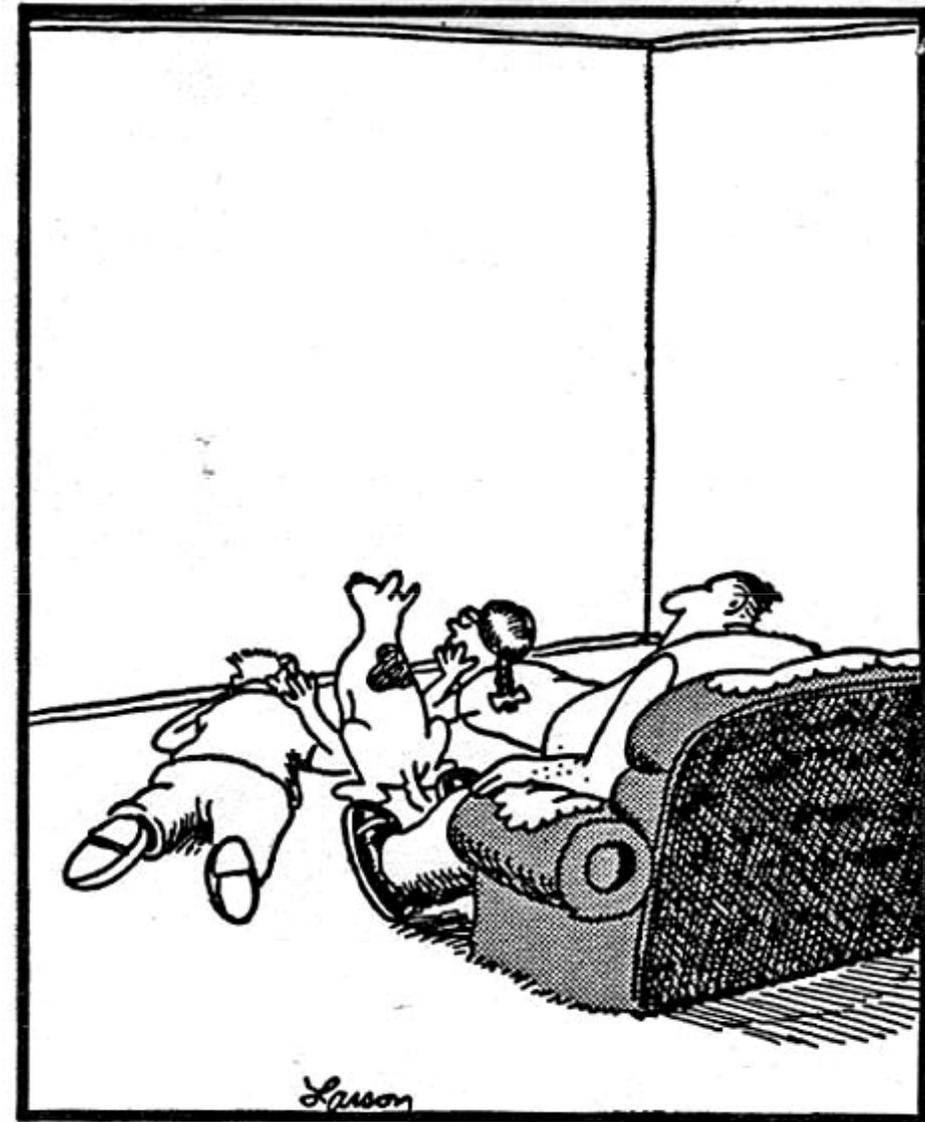
Between 1953 and 2007, the volume of US hardwood standing timber more than doubled, while the area of forest increased by 18%.

Approximately 90% of the hardwood producing land in the US is in the hands of over 4 million private (and mostly non-industrial) landowners. It is usual for a sale of hardwood logs to occur only once or twice in an owner's lifetime.

Sustainable vs. Certified

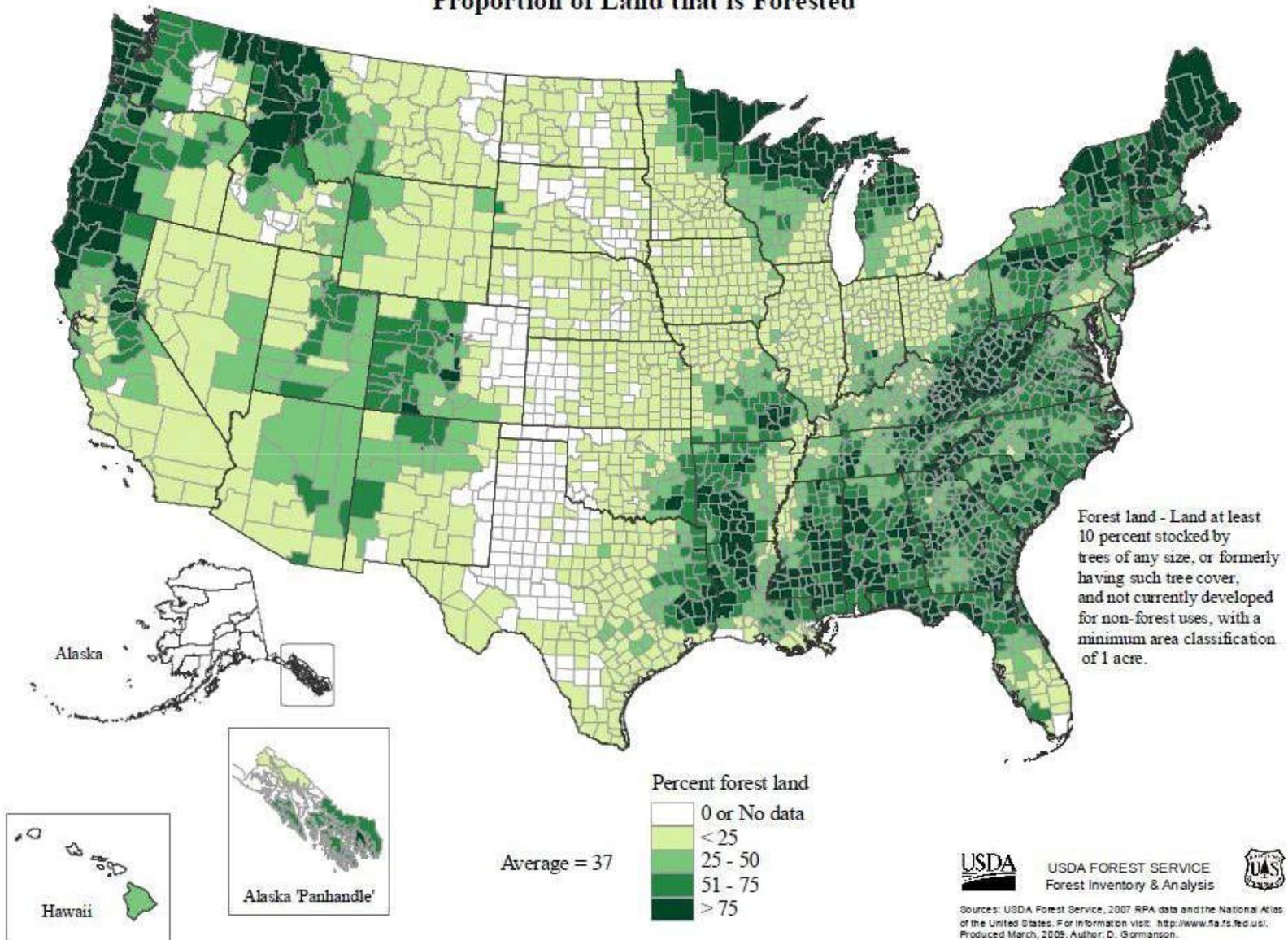


Sustainable forest management has been practiced in the United States since long before certification was invented.



In the days before television

Proportion of Land that is Forested





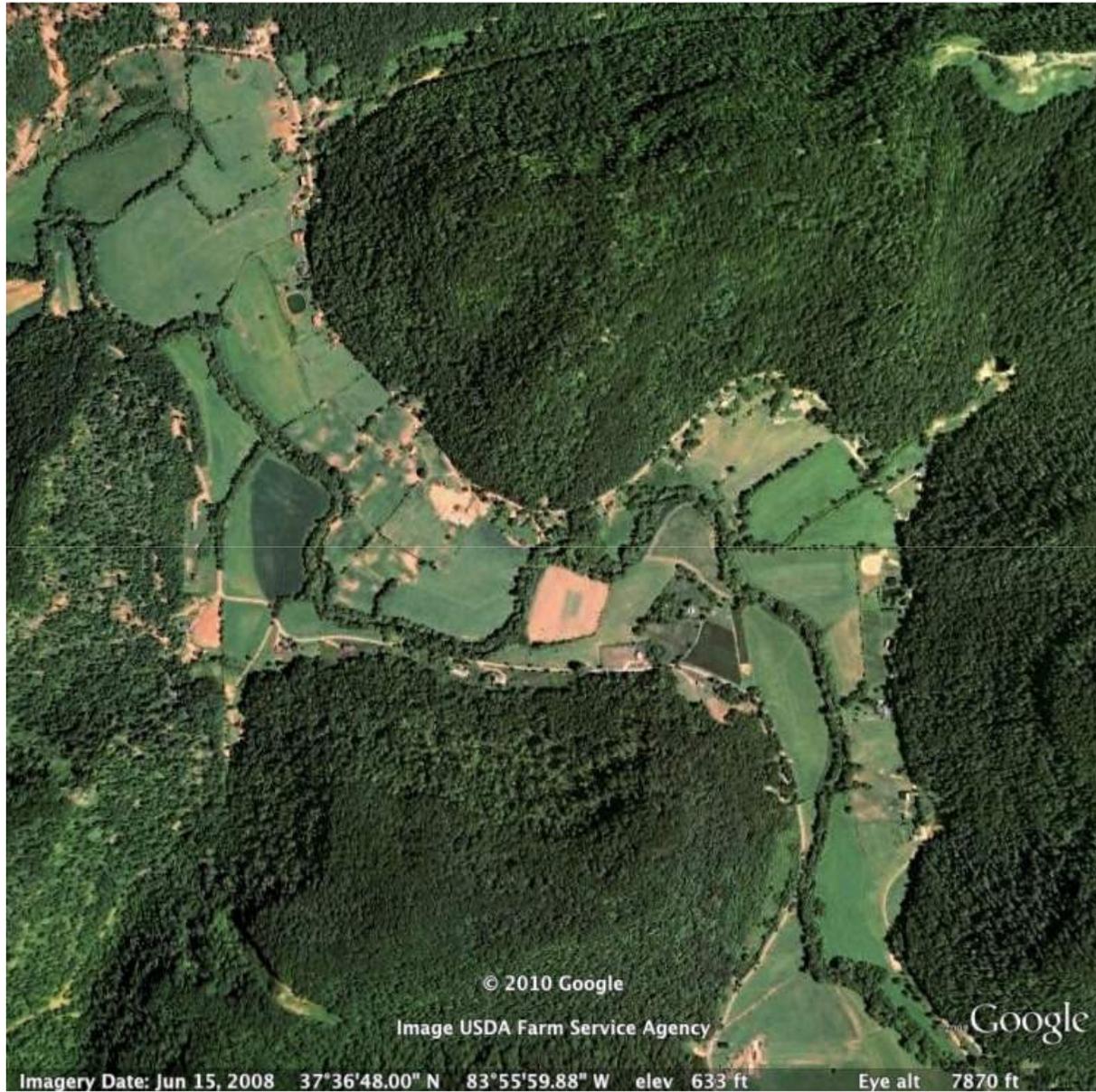
© 2010 Google
Image U.S. Geological Survey
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Imagery Dates: Jul 8, 2002 - Aug 24, 2005 40°01'58.04" N 84°07'21.85" W elev: 941 ft Eye alt: 6034 ft

W





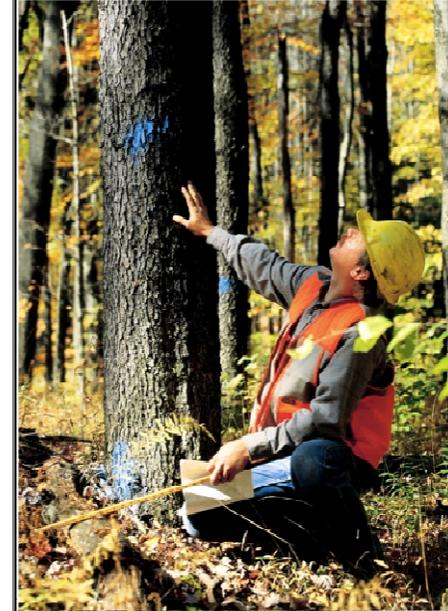
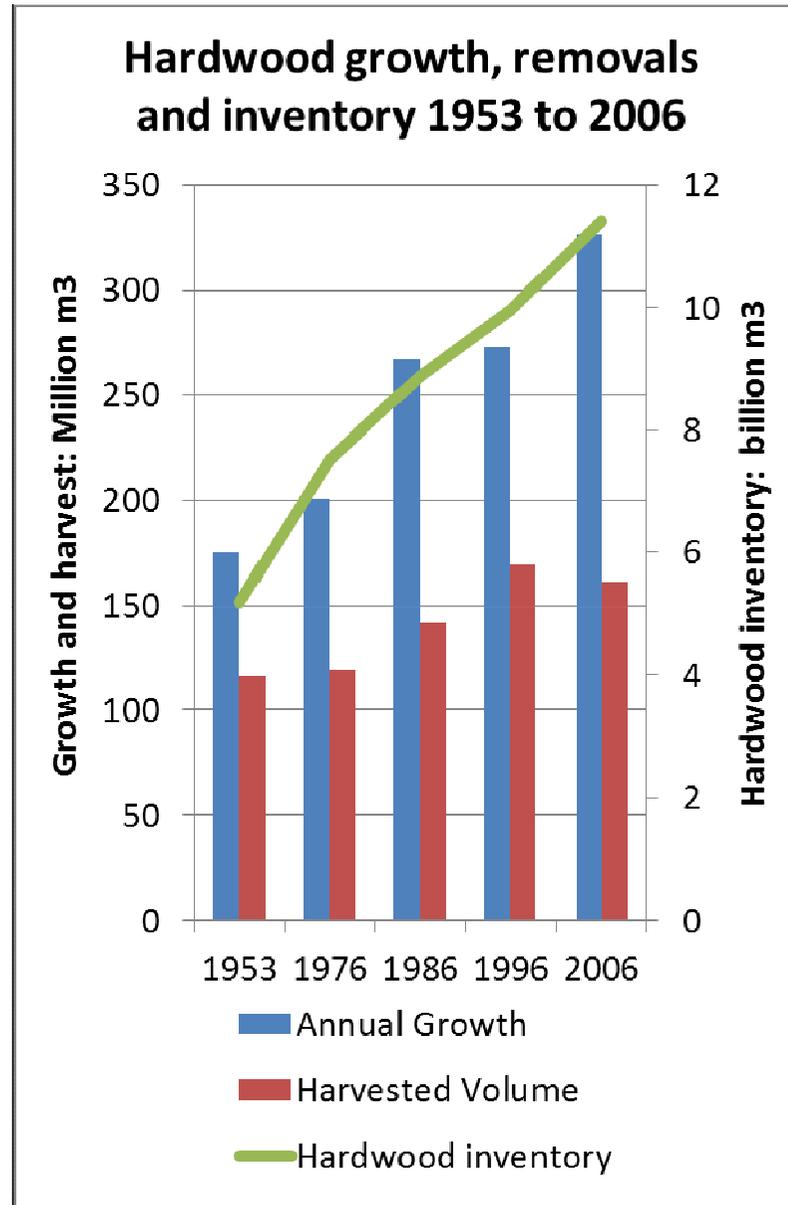
© 2010 Google

Image USDA Farm Service Agency

Google

Imagery Date: Jun 15, 2008 37°36'48.00" N 83°55'59.88" W elev 633 ft Eye alt 7870 ft

Selection harvesting & natural regeneration



Less than 1% of the American hardwood entering the world market could be considered as illegally harvested.

Seneca Creek, 2008

For every tree that is removed from the US hardwood forest, 1.9 trees take its place (naturally).



logs
leveragin
g the
beauty of
perfect
logs

Red oak



Hard maple



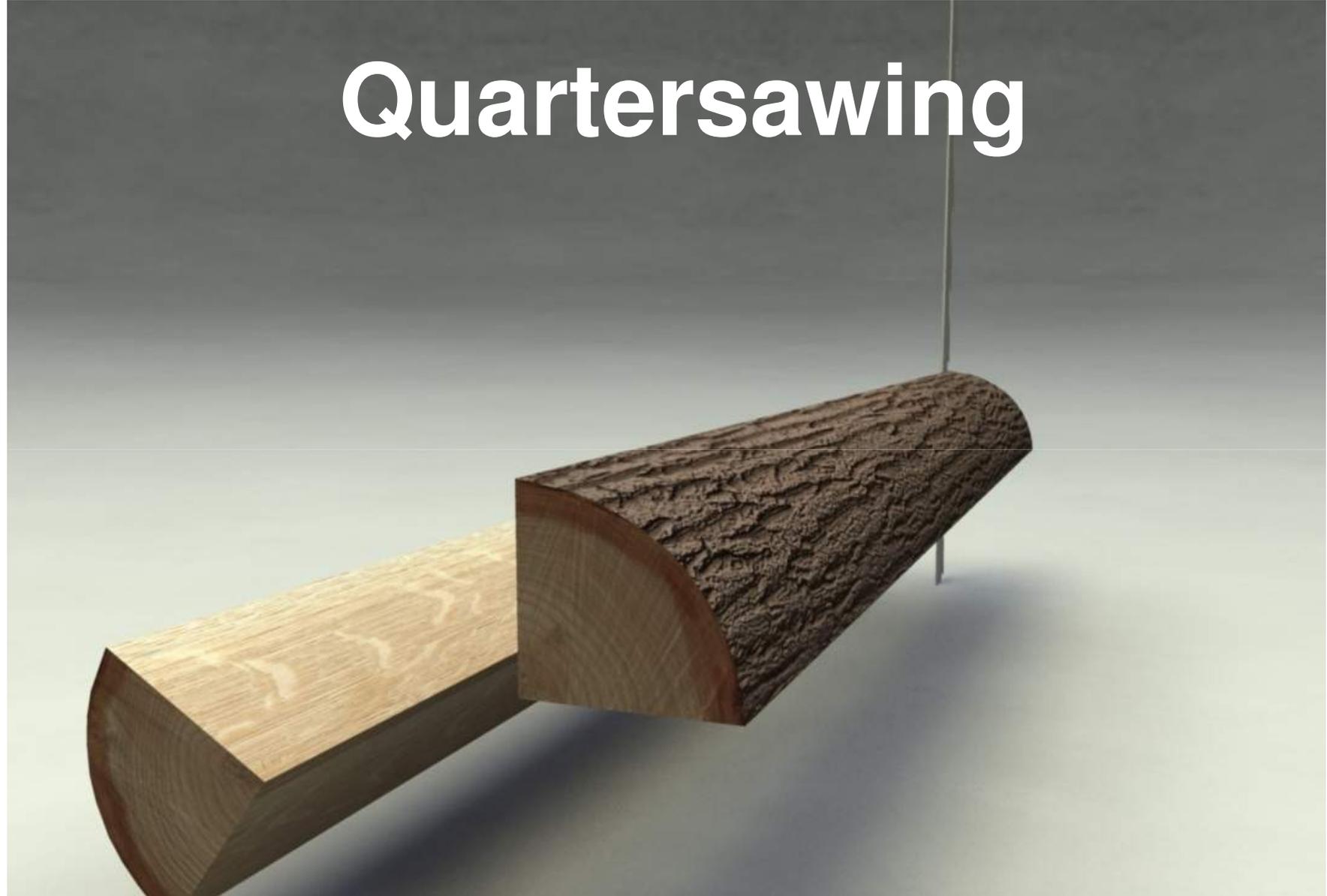
Black walnut



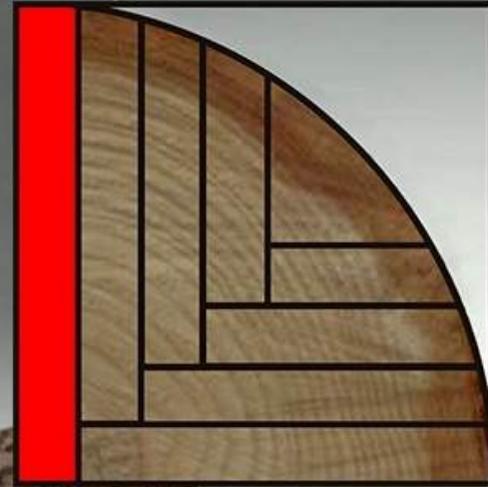
Black cherry



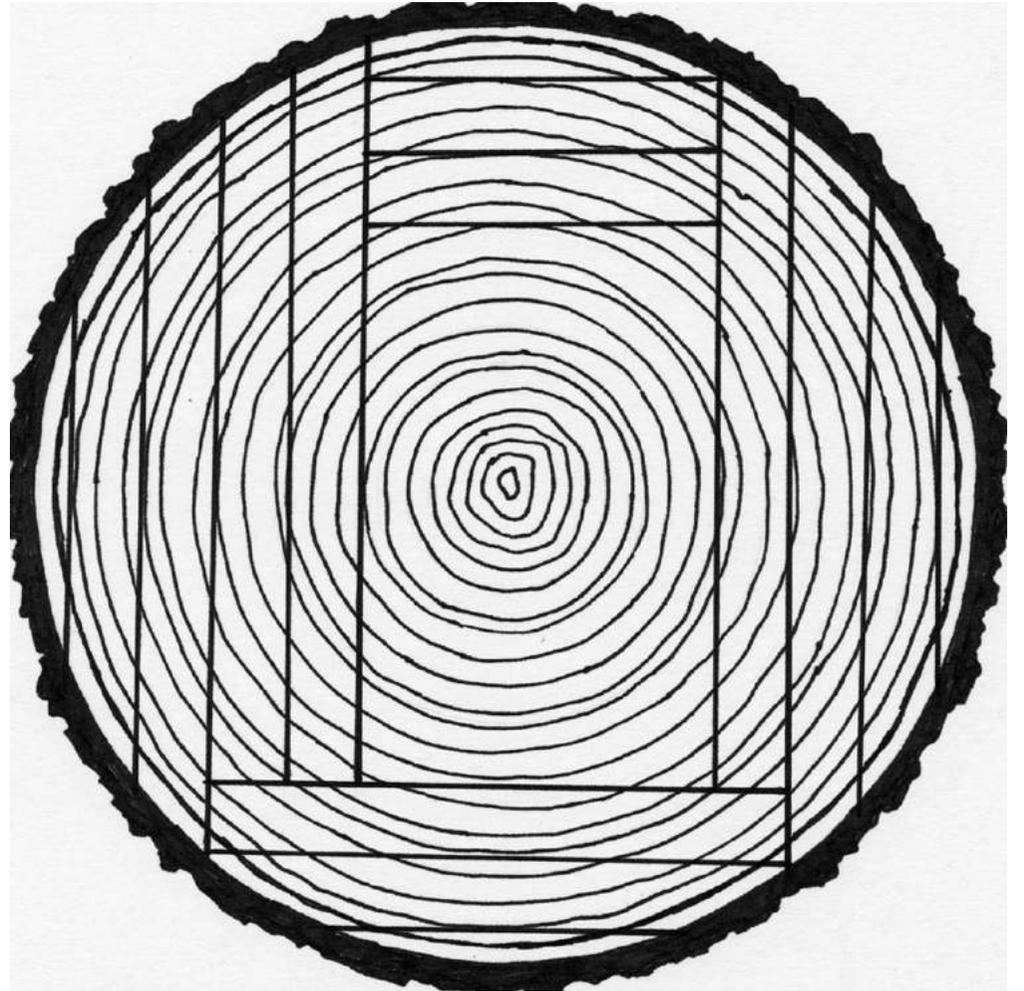
Quartersawing



Quartered Board



Average Finished Width
6.5"





NHLA
STRONG ROOTS. GLOBAL REACH.

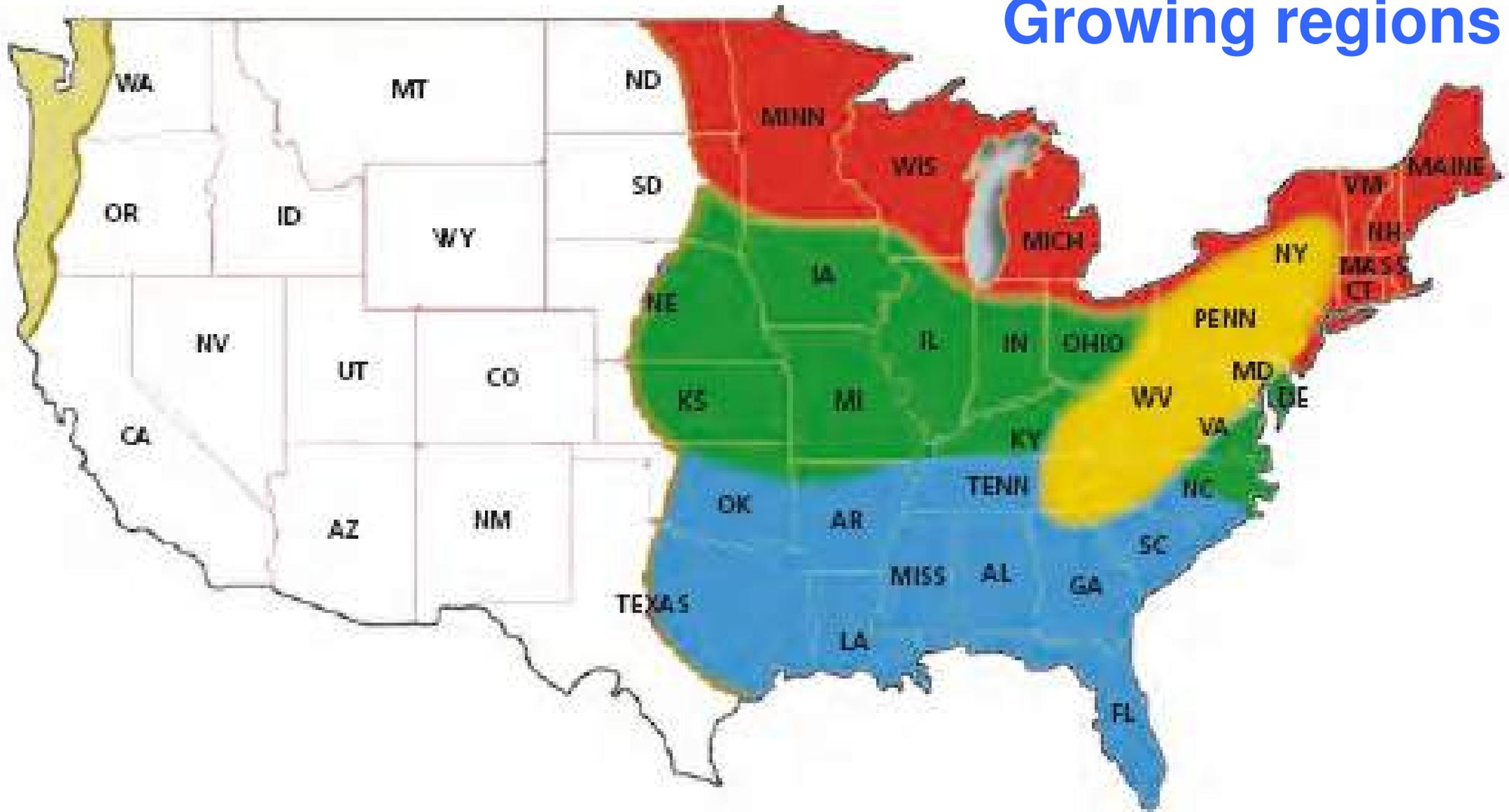
Lumber Grading

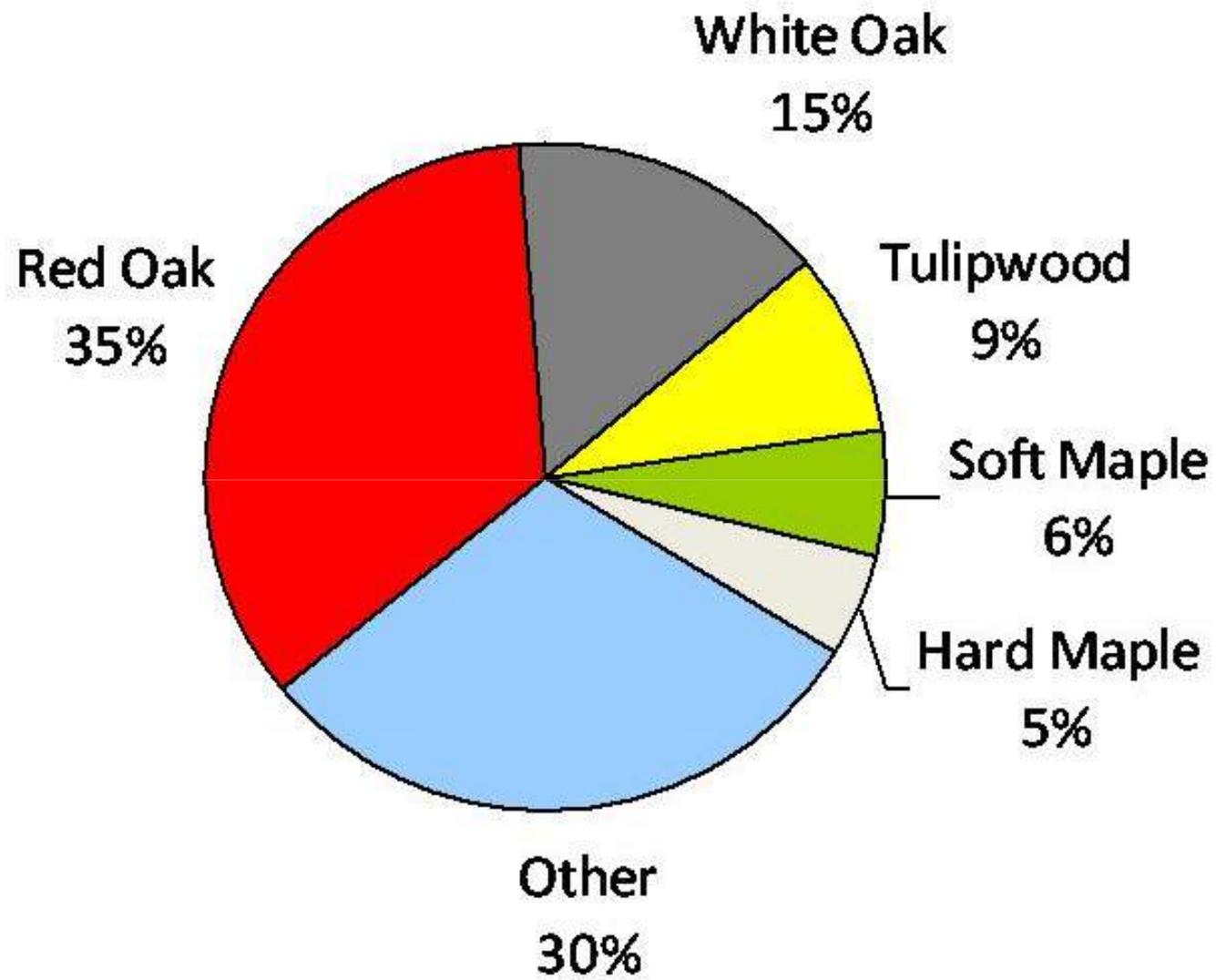


**Kiln drying:
6-9% average
moisture
content**



Growing regions





Life Cycle Assessment of US Hardwoods

- *PE International* commissioned by AHEC
- Conforms to ISO14040 – independent & expert reviewed

“Cradle to gate plus transport into export markets”

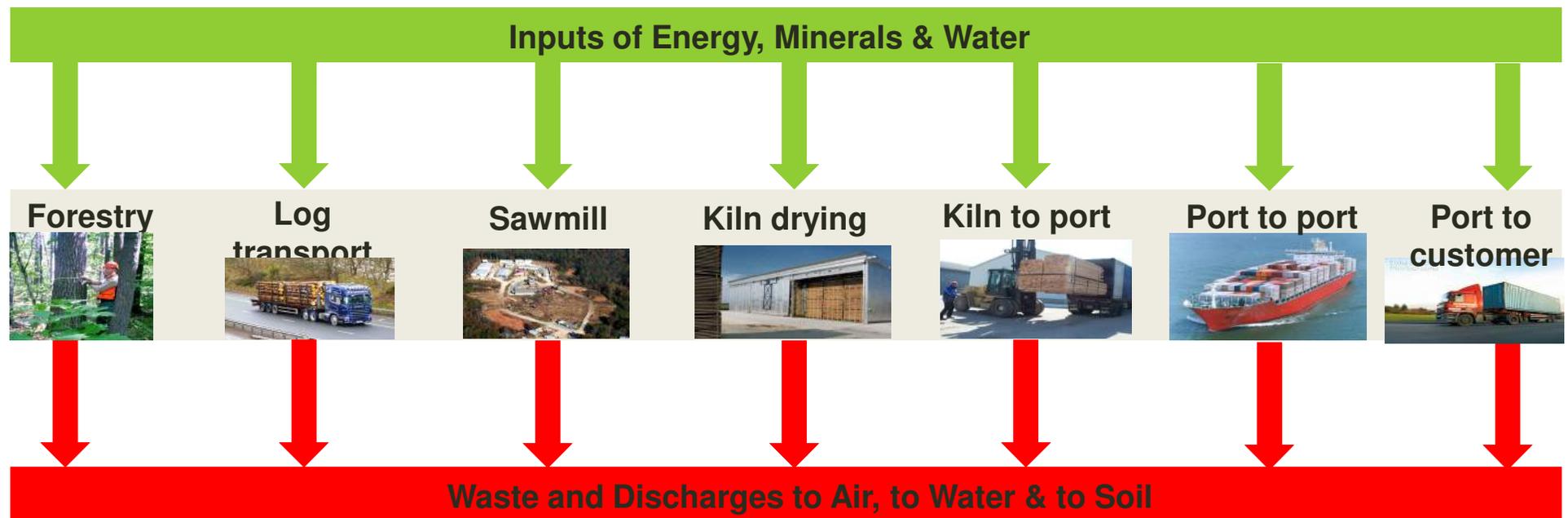
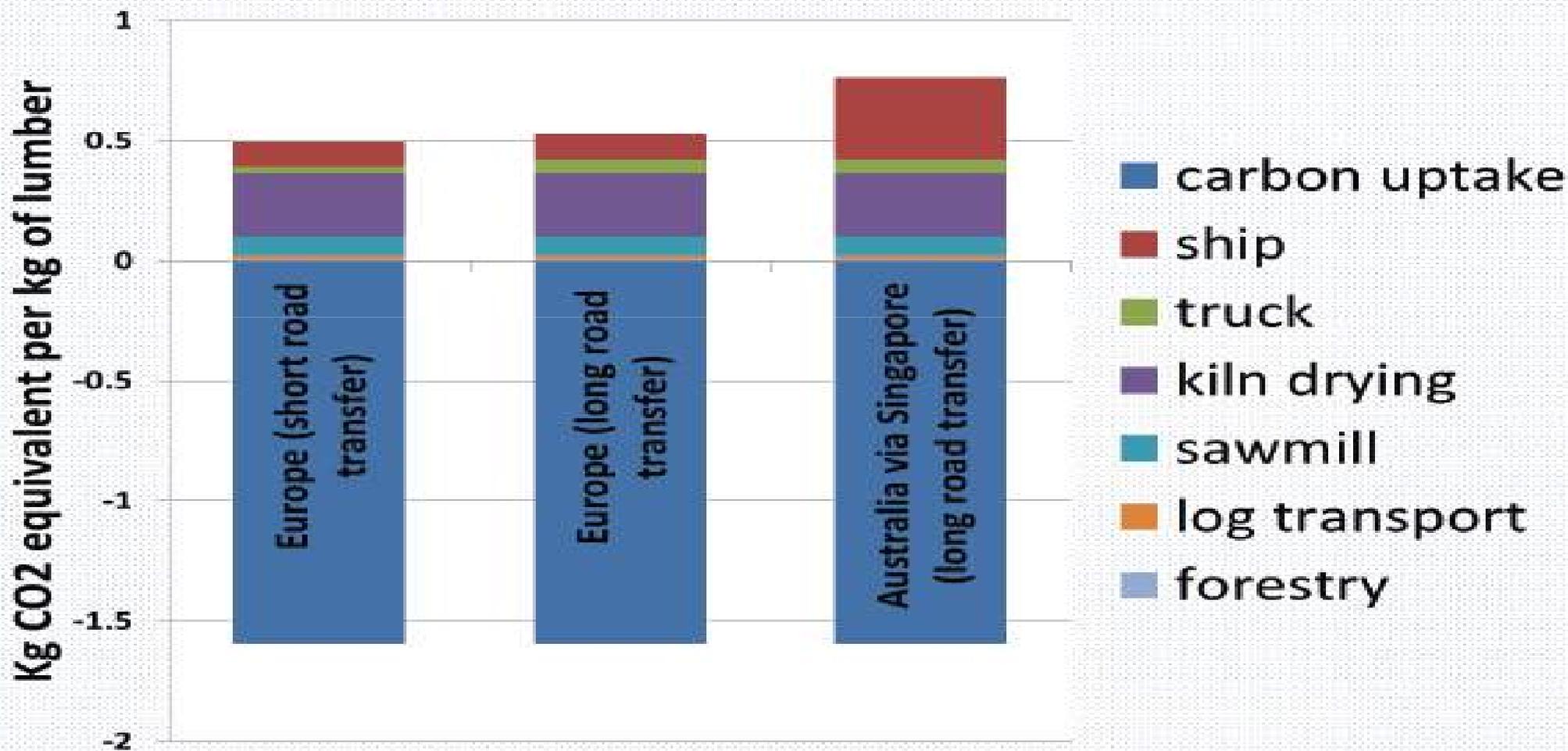


Chart 2: GWP of 1" KD US white oak lumber for different transport scenarios



American Hardwood Environmental Profiles (AHEPs)

American Hardwood Environmental Profile

Info is provided on the environmental impact to deliver a defined volume of finished goods to a customer. The data is based on the life cycle assessment (LCA) model provided by the U.S. Forest Service (USFS) and the U.S. Environmental Protection Agency (EPA). The data is based on the life cycle assessment (LCA) model provided by the U.S. Forest Service (USFS) and the U.S. Environmental Protection Agency (EPA). The data is based on the life cycle assessment (LCA) model provided by the U.S. Forest Service (USFS) and the U.S. Environmental Protection Agency (EPA).

U.S. Forest Service

U.S. Environmental Protection Agency

Figure 1: Distribution of harvested yellow pine

Figure 2: Growth and removal of harvested yellow pine

Life cycle assessment (LCA) to give you transport (LCA)

The following chart shows the environmental impact of the transport to the overseas customer. The data is based on the life cycle assessment (LCA) model provided by the U.S. Forest Service (USFS) and the U.S. Environmental Protection Agency (EPA). The data is based on the life cycle assessment (LCA) model provided by the U.S. Forest Service (USFS) and the U.S. Environmental Protection Agency (EPA).

Impact Category	Carbon Footprint (kg CO2e/kg)	Acid Equivalent (kg SO2e/kg)	Primary Energy (kg oil/kg)	Abiotic Potential (kg Sb eq/kg)	Global Warming Potential (kg CO2e/kg)	Human Toxicity Potential (kg 1,4-DCB/kg)	Marine Aquatic Toxicity (kg 1,4-DCB/kg)	Terrestrial Aquatic Toxicity (kg 1,4-DCB/kg)
1" Hardwood - 3 cubic meter	10,200	0.001	0.001	0.001	0.001	0.001	0.001	0.001
2" Hardwood - 3 cubic meter	10,200	0.001	0.001	0.001	0.001	0.001	0.001	0.001
3" Hardwood - 3 cubic meter	10,200	0.001	0.001	0.001	0.001	0.001	0.001	0.001

Description of impact categories

Parameters and assumptions

Consignment-based reporting on the environmental impact across eight key categories of delivery to the overseas customer



American red alder





American ash

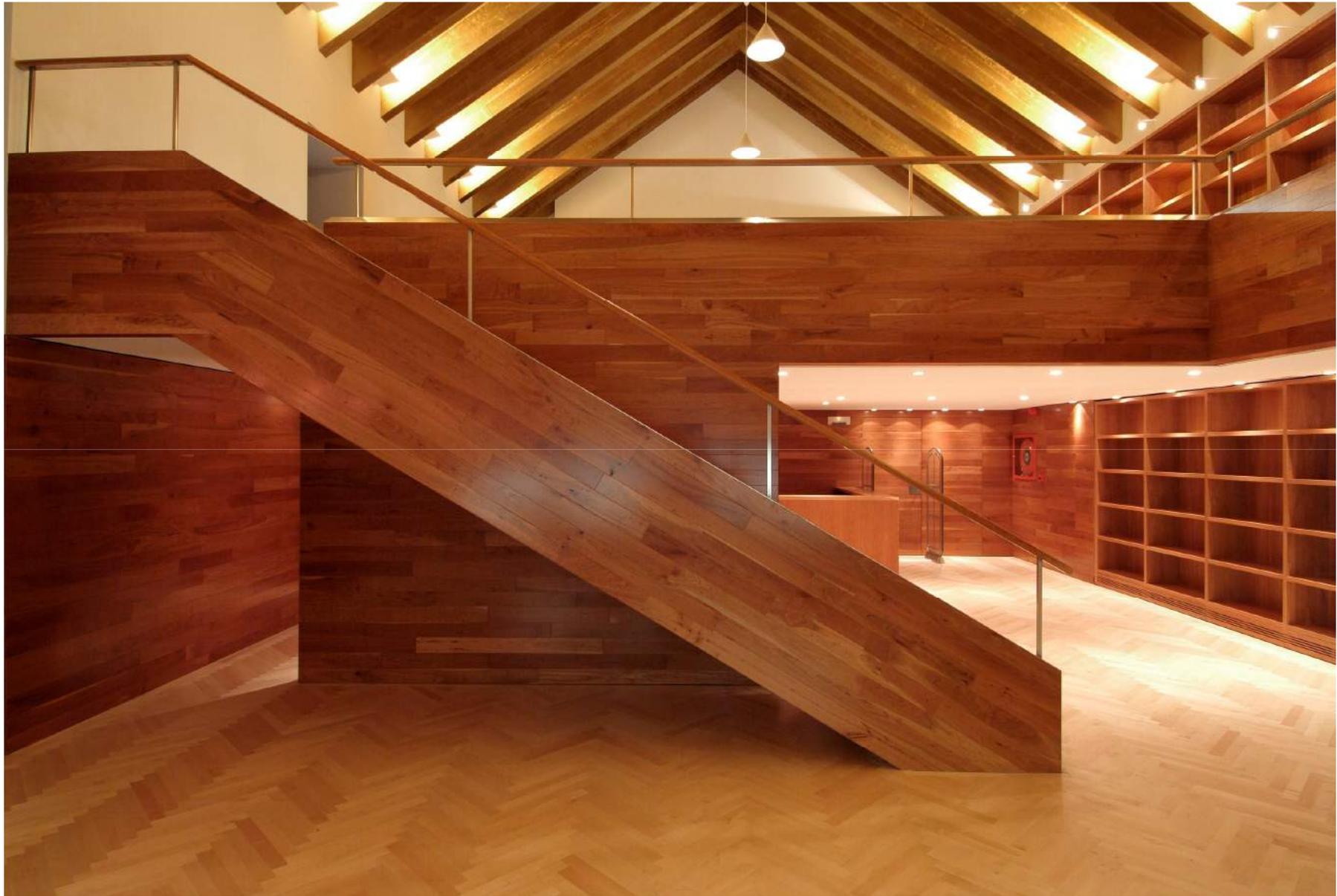








American cherry







American hickory/pecan







American hard maple

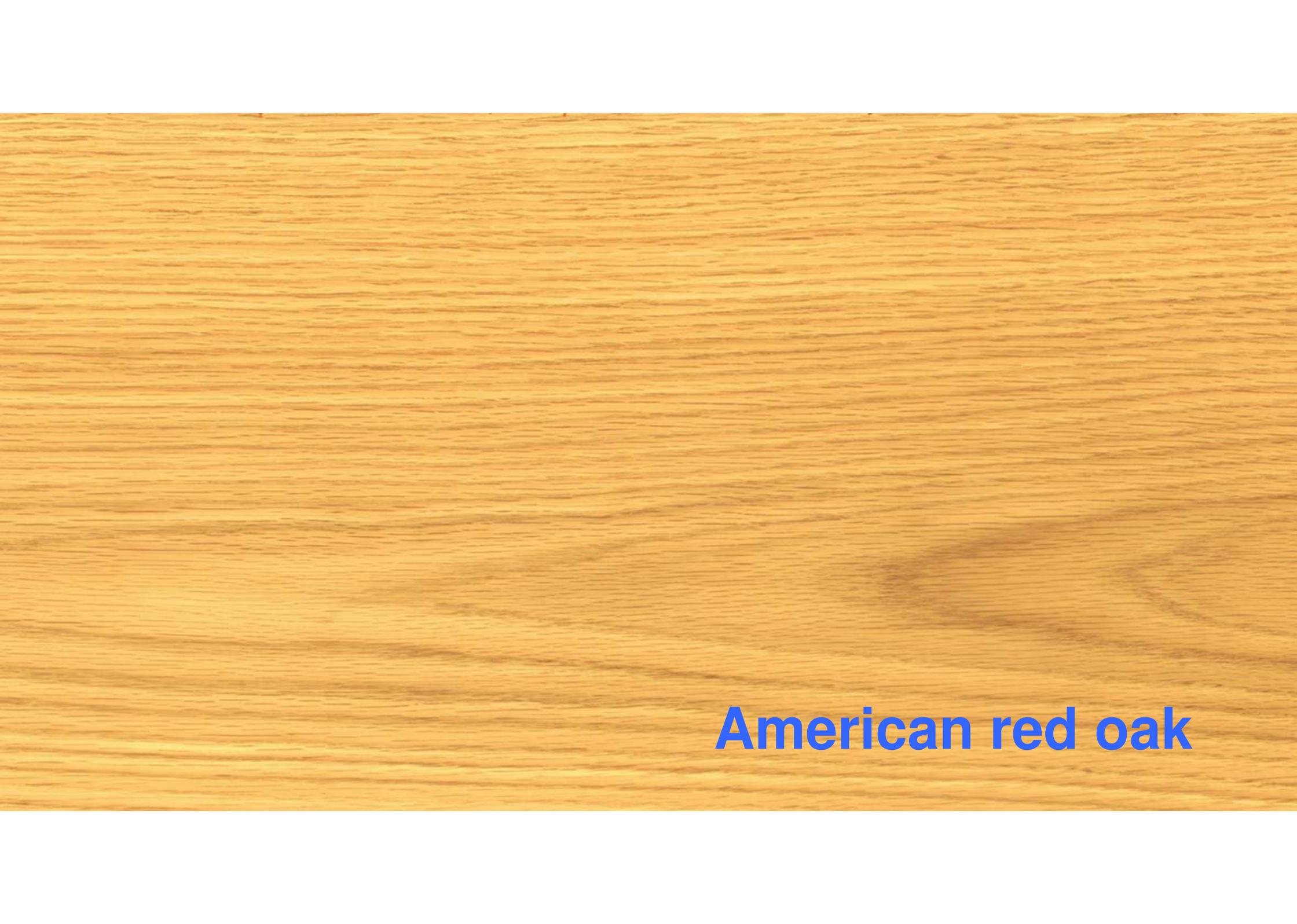




A close-up photograph of a piece of American soft maple wood. The wood has a light tan or cream-colored hue with a fine, wavy grain pattern. There are several prominent, slightly darker reddish-brown streaks and spots scattered across the surface, which are characteristic of the wood's natural grain and possibly some minor imperfections or staining. The texture appears smooth and slightly fibrous.

American soft maple



A close-up photograph of American red oak wood, showing a prominent, wavy grain pattern with a warm, golden-brown color. The wood surface is smooth and has a natural, slightly uneven texture.

American red oak

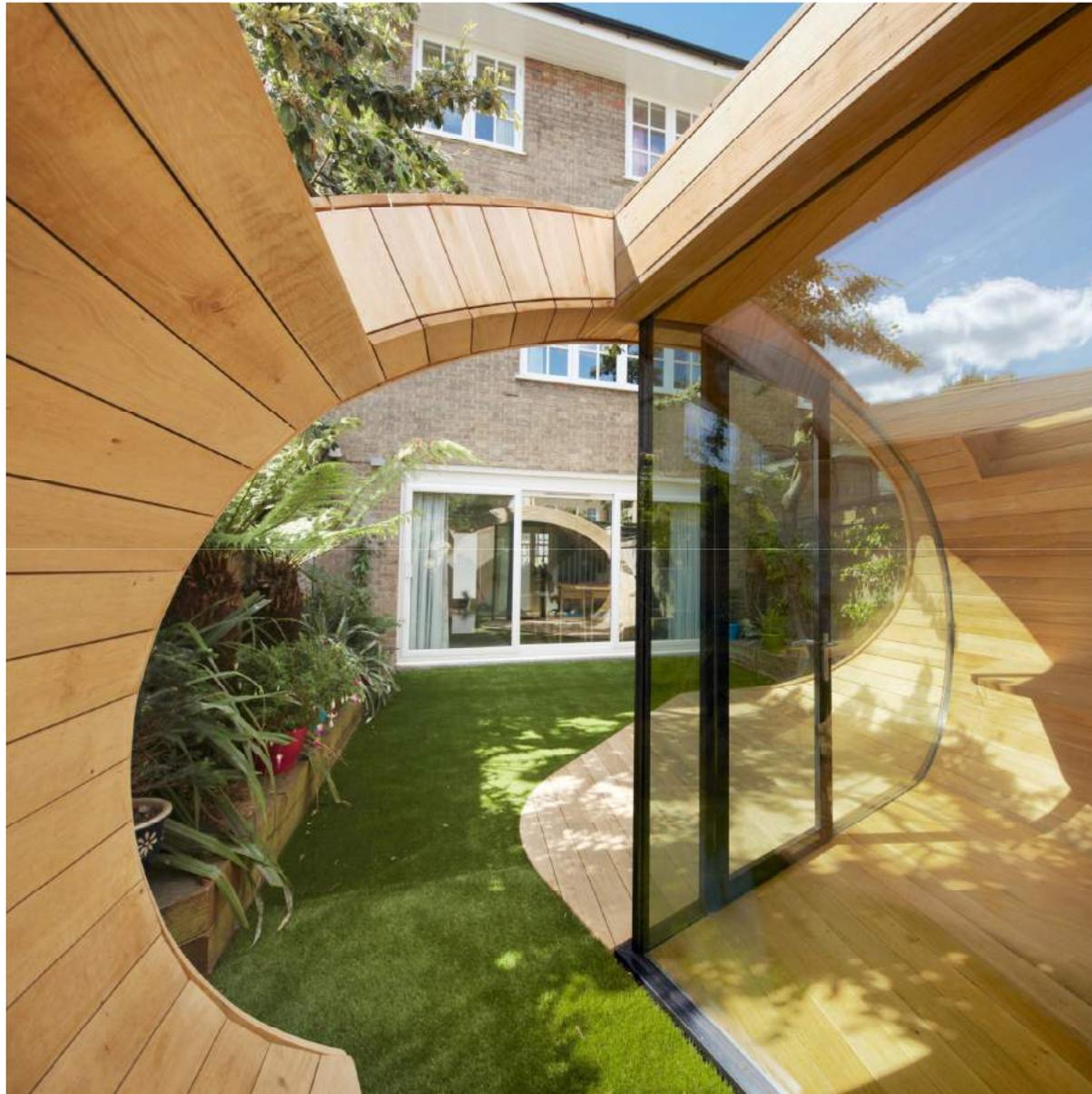






A close-up photograph of American white oak wood, showing a prominent, wavy grain pattern with alternating light and dark brown tones. The wood surface has a natural, slightly textured appearance.

American white oak

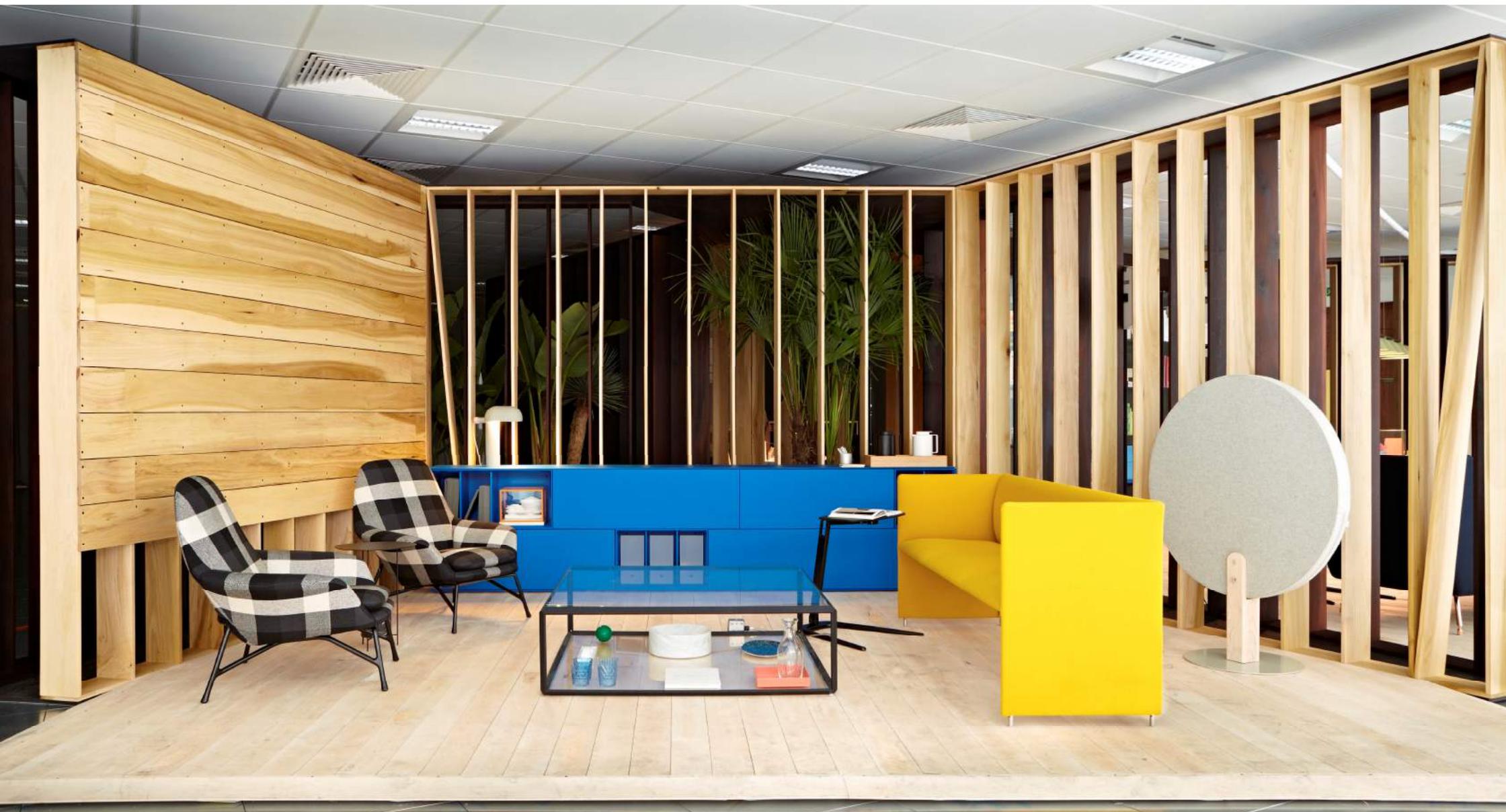


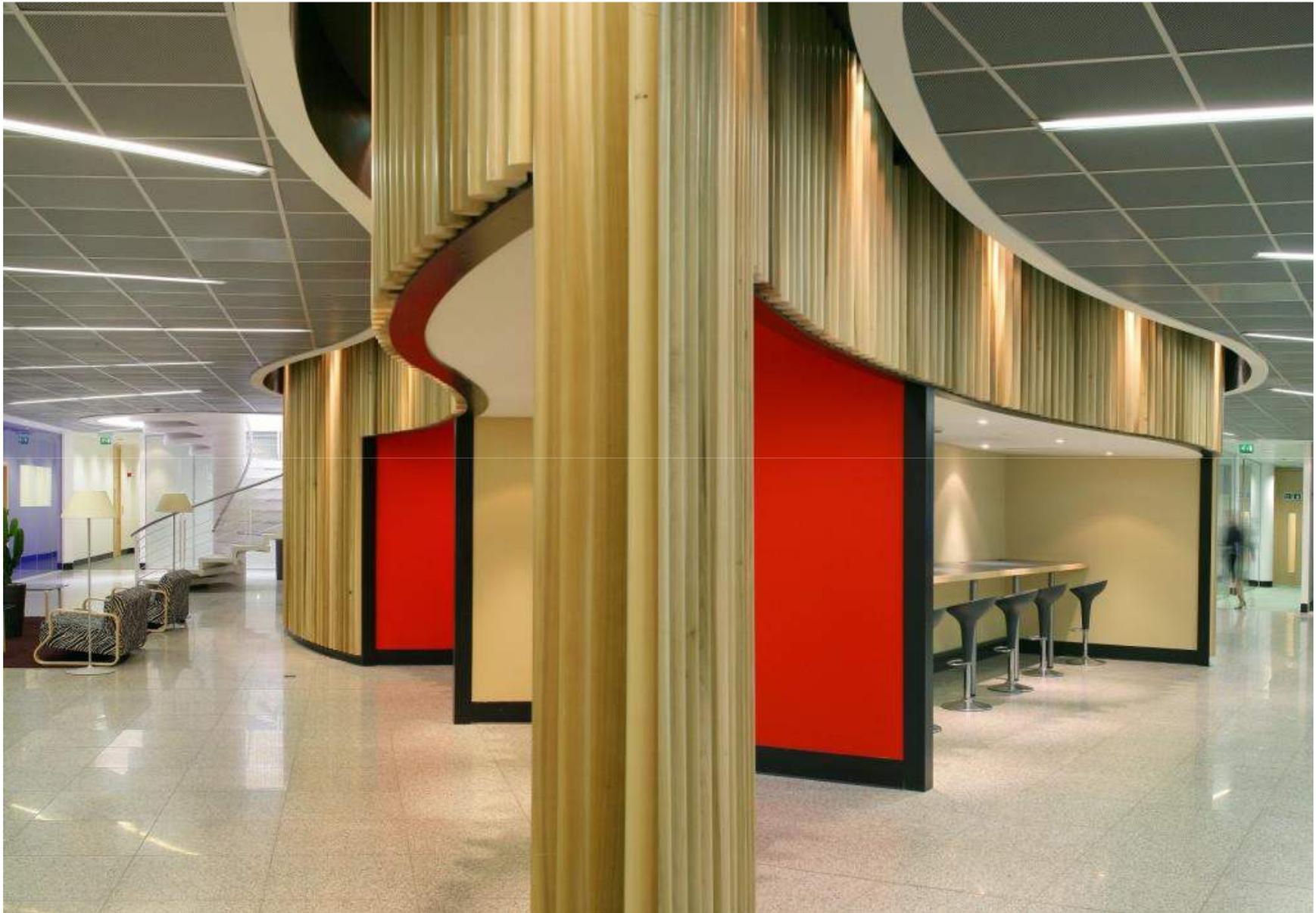






American tulipwood

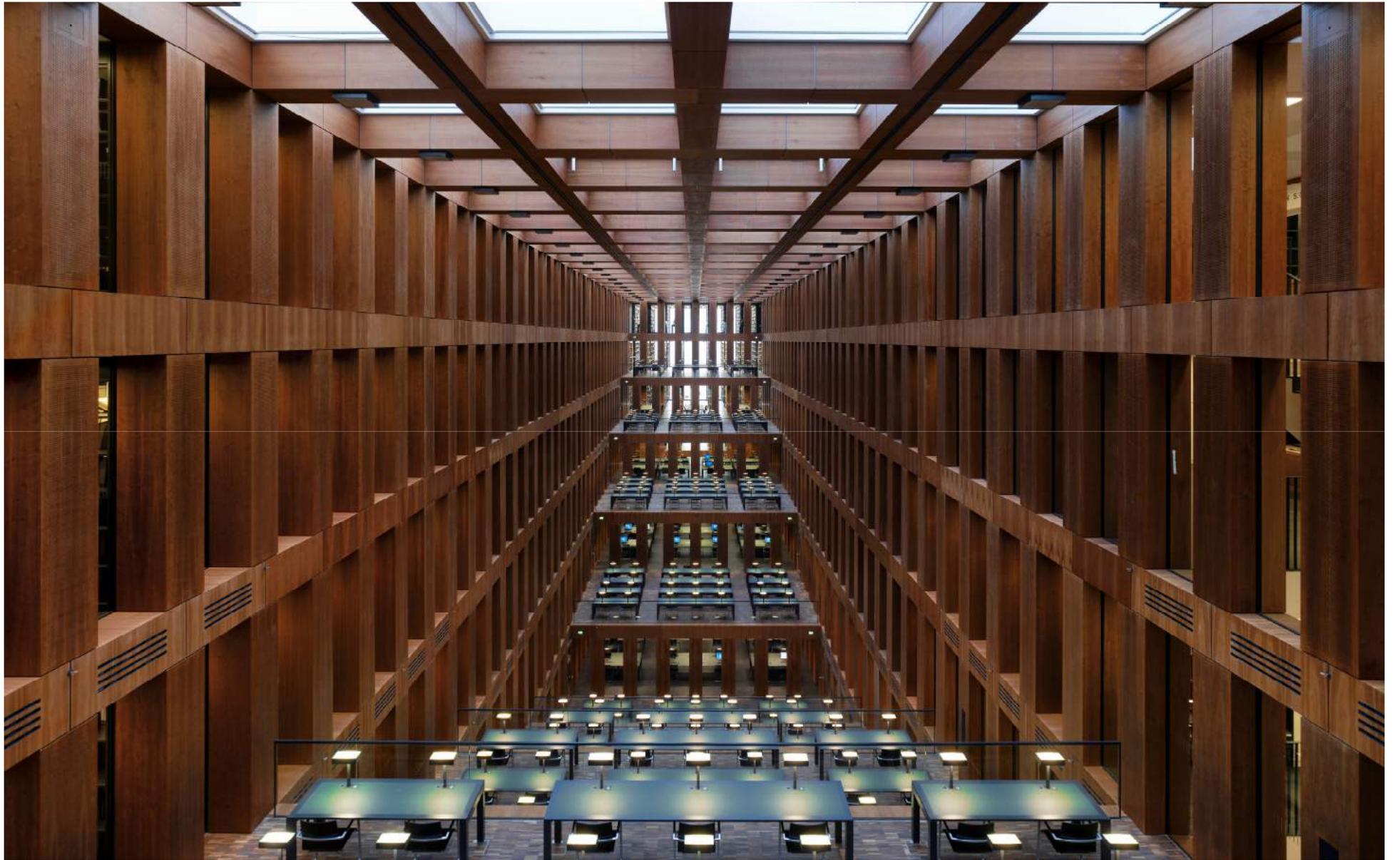




A close-up photograph of American black walnut wood, showing a rich, dark brown color with prominent, wavy grain patterns. The wood has a smooth, polished appearance. The text "American black walnut" is overlaid in the bottom right corner in a white, bold, sans-serif font.

American black walnut





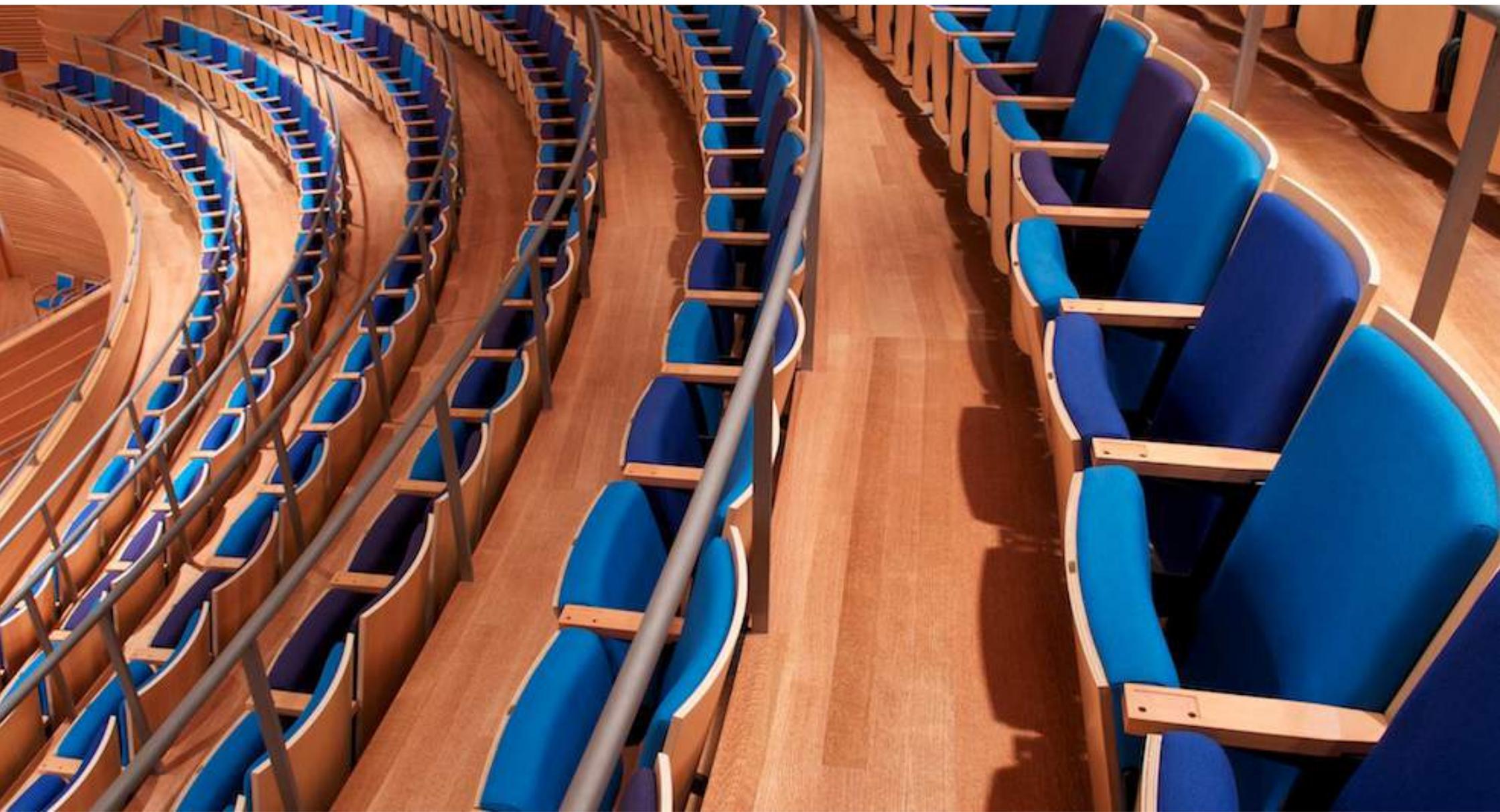
American hardwoods in application

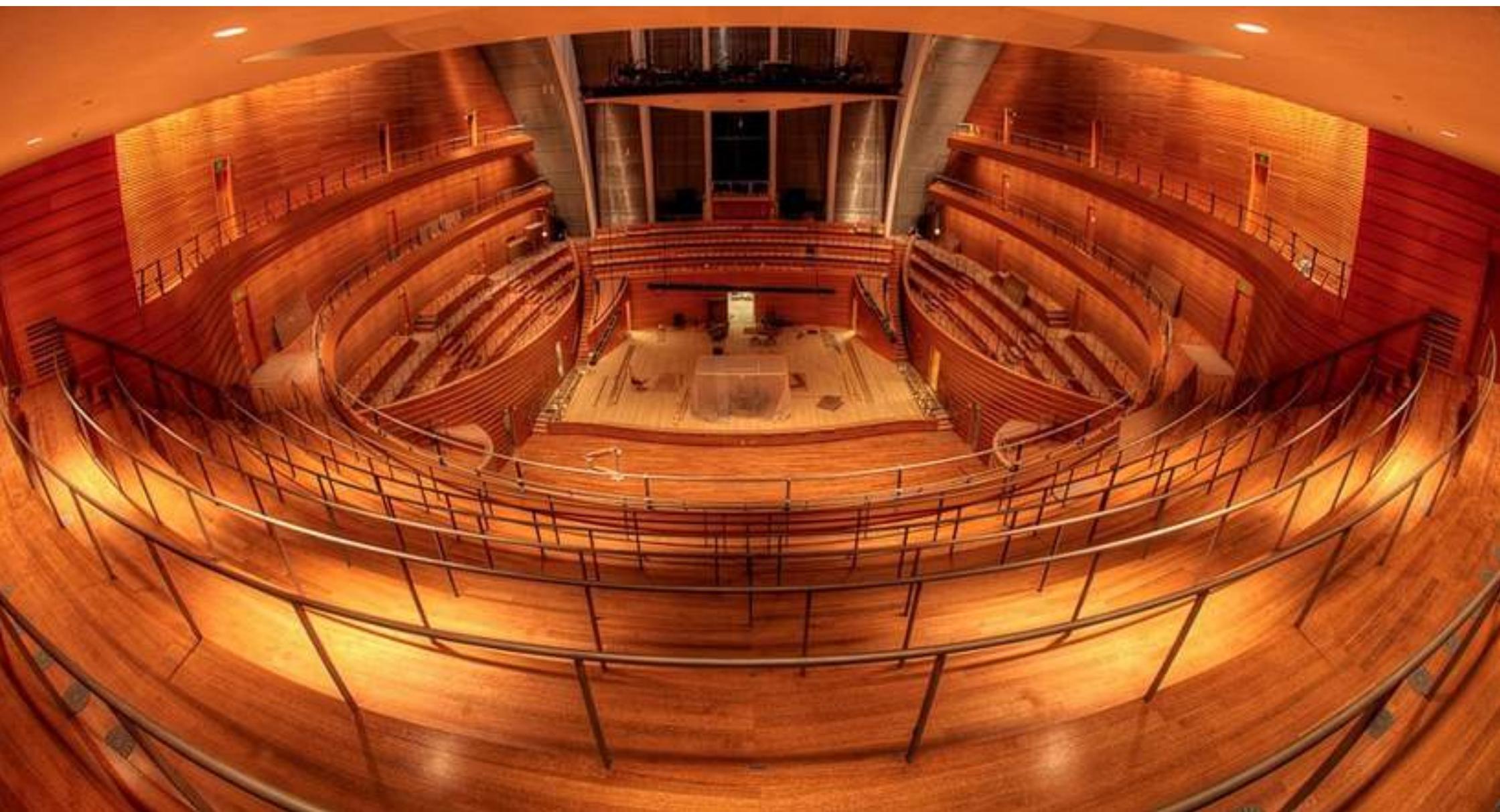
The Challenge of Design:

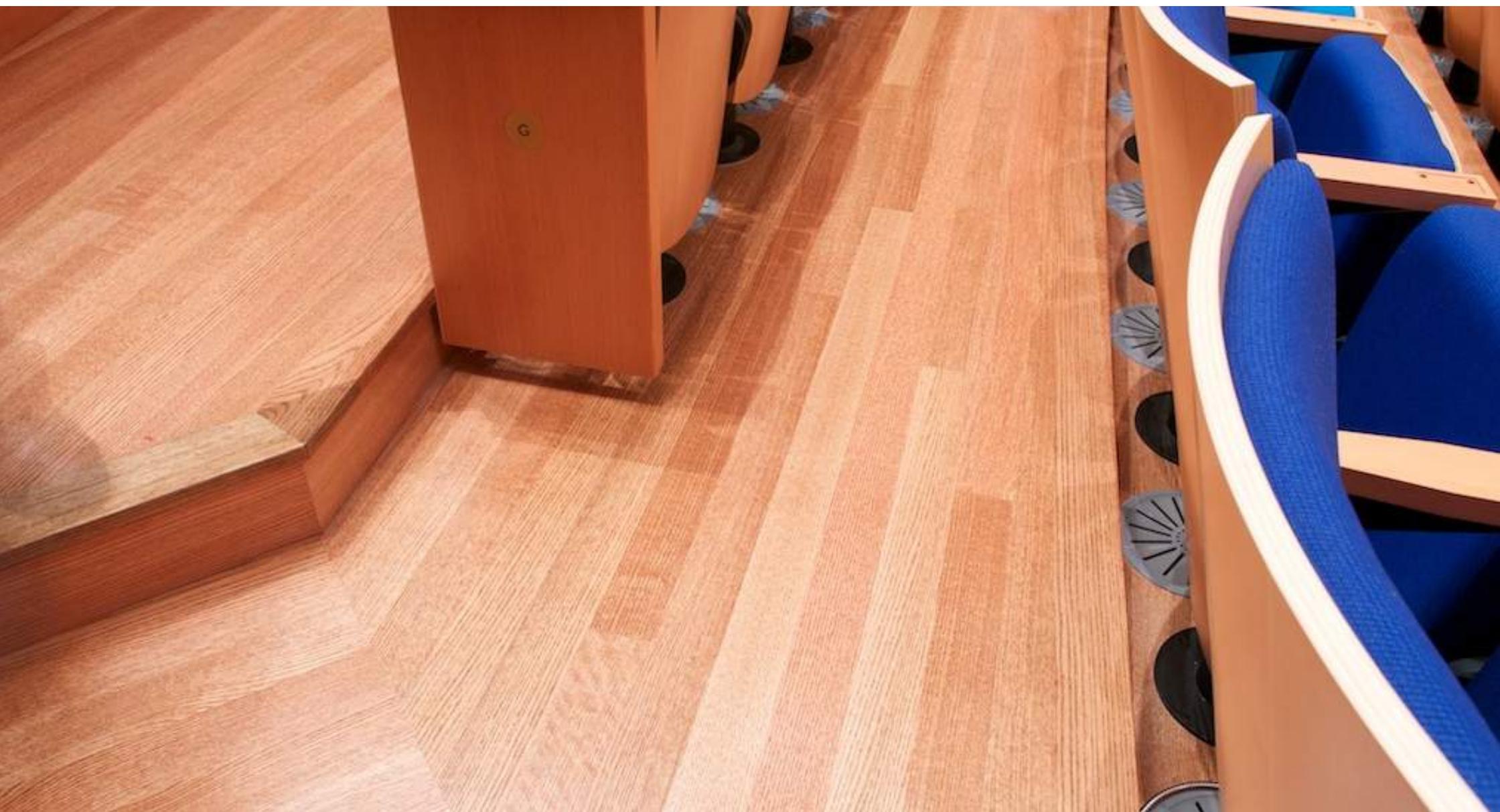
- 1. Create a vision**
- 2. Convey a vision**
- 3. Deliver a vision**

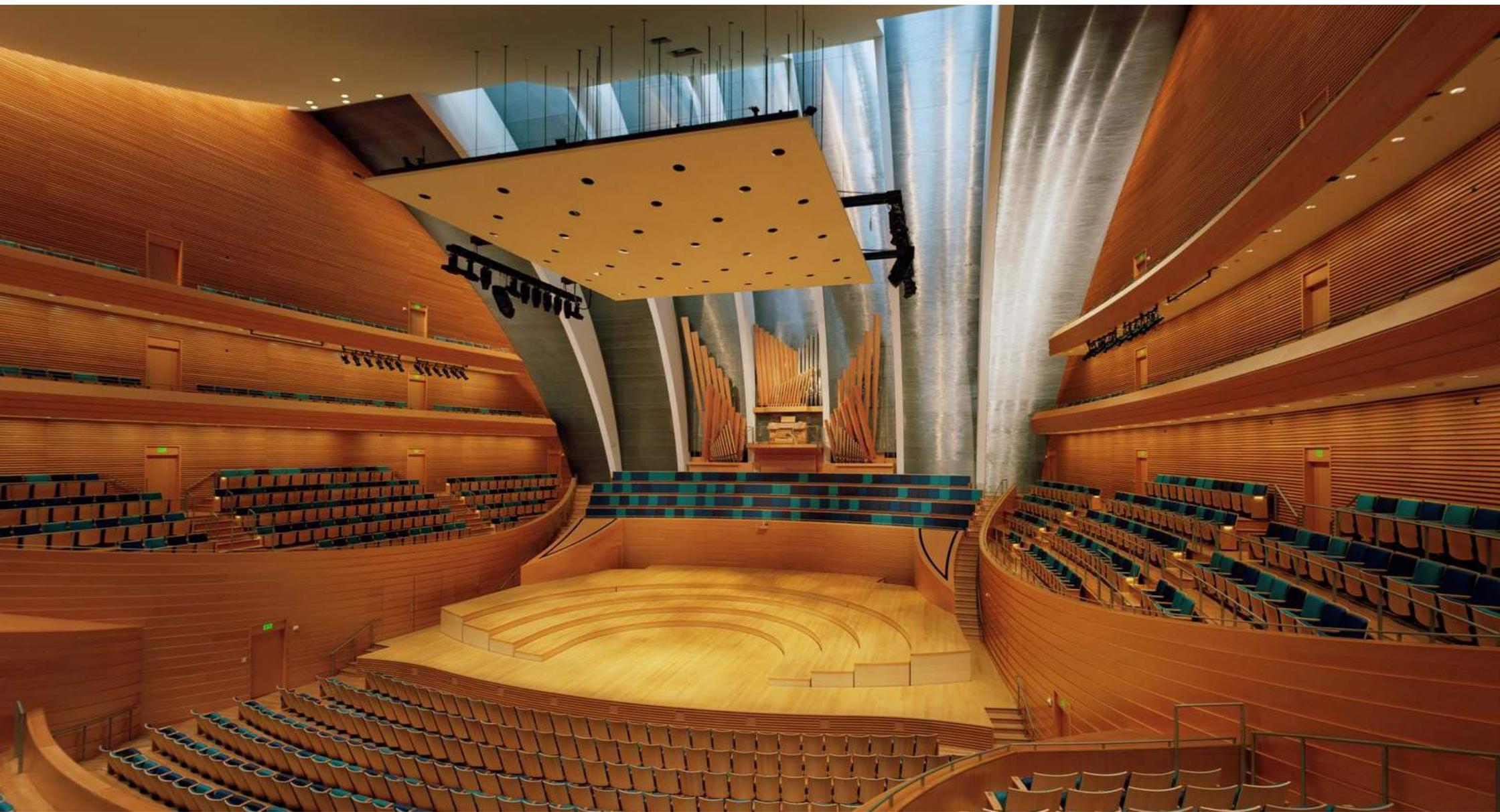
Safdie Architects











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