

Arch 464
ECS
Spring 2021

Name _____

Quiz #4

"Visible Acoustics!"

Read and look at everything before you write!

For this problem you are acoustically curious about a new theatre at Horris Hill prep school near Newbury, UK.



View from the stage.

David Brownlow Theatre: A studied miscellany of materials and styles add performance spaces and a new civic presence to a prep school near Newbury.

The architectural skin and bones of the David Brownlow Theatre at Horris Hill prep school present a conundrum. Everything about the building's form, elevations and interiors are extremely distinct; and yet, encountered as an object in an 85-acre setting that is part hamlet, part landscape, the building ushers the mind and senses into a pleasing state of puzzlement. Despite the clarity of Jonathan Tuckey Design's scheme, it's impossible to give the architecture a cast-iron typological label. In one sense, this is fitting: the theatre stands on the southern edge of the school's architectural macaroni of buildings, including the 1888 brick and tile-hung main building, which has a peculiar faux-Classical PoMo portico, a barn-like gym, a main academic block that resembles a generic suburban rest home, and a stableyard-like building crowned with a bumptious pop-up structure which PG Wodehouse might have described as 'Bally Well Baroque'.

The headmaster, Giles Tollit, is a classicist and thinks of the school as a small town; the David Brownlow Theatre is therefore Horris Hill's Epidaurus – well, the back of it, anyway, where the architects have fashioned a very simple stepped grassy auditorium next to the rear façade. 'The theatre is not just for us,' explains Tollit. 'It's for sharing with the wider community. I want this to be a living, breathing theatre with a civic feel and a life outside the school.'

Jonathan Tuckey was selected for the project from a shortlist which included Britain's current victor ludorum of theatre architecture, Haworth Tompkins, and for at least two reasons: he and his small team managed to present an unusually detailed schematic proposal within the one-week period given by the school; and they were particularly intent on civitas, developing their design after interviewing a wide range of Horris Hill's 'villagers'.

The theatre is essentially composed of four materials: a concrete plinth which steps up once at the north end of the sloping site and extrudes handsomely formed external benches; a larch cross-laminated timber main structure; beech details; and Viroc particle board rainscreen panels and internal flooring – a pinky-terracotta shade for the former, slate-grey tessellations for the latter.

In section, the structure, with a very shallow dual-pitch roof, suggests an archaic barn, and only two features contradict this: a two-storey, de Chirico-ish timber banner frame-cum-campanile with a nominal public square in front of it; and the clean-lined ground floor reception volume and covered colonnade, which project from the north and east façades respectively. The shell of the building and its interior are quite different in manner, most notably in the way the elements of structure and surface are expressed. The elevations have a precisely finished look; the interior has an unfinished quality and is dominated by the faintly medieval heft of the exposed CLT structure, the simple secondary carpentry of the battening, and wooden bench seating. The latter was inspired by the curved feet of Mackintosh's auditorium seating at the Glasgow School of Art, and built for around £12,000 via a Tuckey-devised cutting and fabrication system based on foamboard and MDF mock-ups. The design process as a whole involved the production of 1:200 site and volumetric models, 1:25 models of the building's envelope, interior, and sizeable portions of the façades, and 1:10 fragments, some produced by A-level intern students

Internally, a wooden balustraded minstrels' gallery extends the main entrance sequence from the beech-battened foyer into and along the east side of the auditorium, which has a relatively outsized stage area. The walls are composed of CLT panels, ordered by strongly protruding horizontal bands of wood and spaced battens that are set back slightly. The occoya-framed windows are oversized; there are doors on the east and west sides of the auditorium; and a lolling, flexibly acoustic 'tent' overhead. The strong character and atmosphere of the auditorium are a creatively 'annoyed' (Tuckey's word) critique of the usual deployments of CLT, which produce, he says, 'flat, lazy buildings

Yet these references are folded into Tuckey's insistence that a fundamental aim of architects should be to produce backgrounds, rather than foregrounds. Cue Ian Nairn on St Mary Woolnoth: 'You don't remember until afterwards how strange the building is ... it transcends originality.' But you do notice immediately how architecturally strange and original the Brownlow Theatre is – and that it is a foreground rather than a background object. And this makes the building substantially more than the decorated drama shed that Jonathan Tuckey intended – and it is a moreness that remains satisfyingly mysterious.

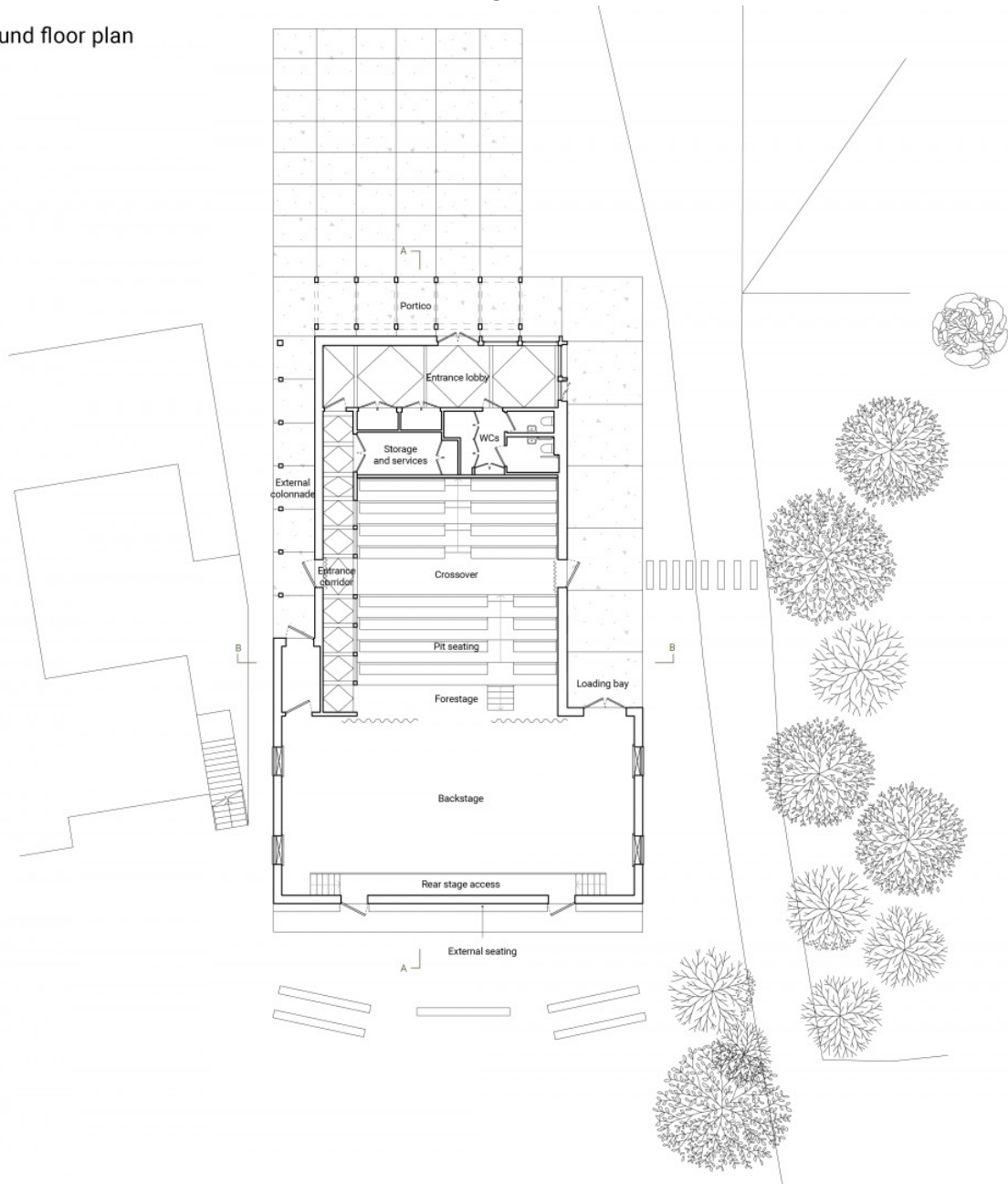
—Jay Merrick

The new building is orientated to embrace the latent urbanity of the adjacent school campus, creating a civic square in conjunction with the existing collection of buildings. The theatre responds to its surroundings not through replication of a local vernacular, but by being consciously distinct in materiality and structure. However, the warm red hue of the Viroc elevations roots the theatre among the earthy brick of the neighbouring Victorian buildings and more recent additions.

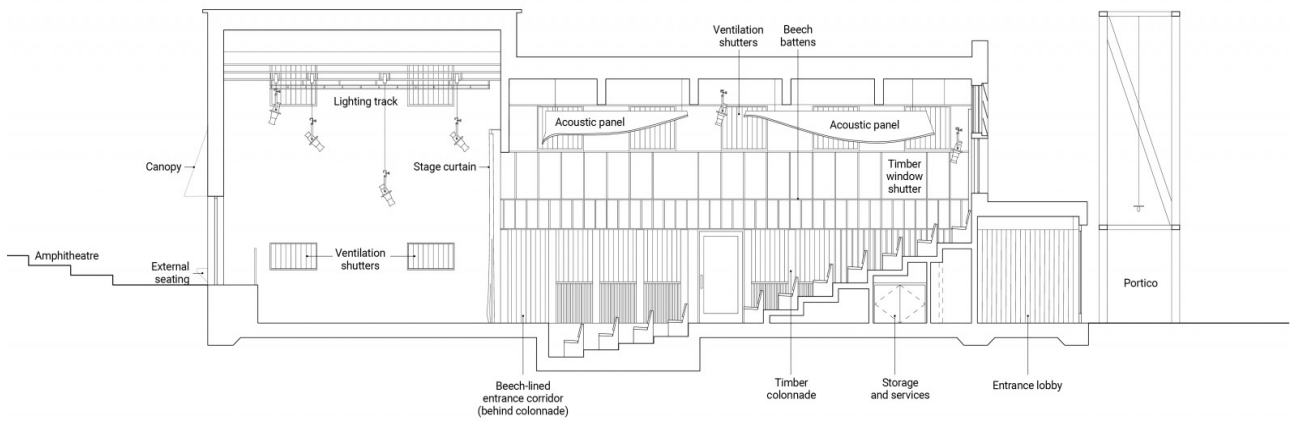
We have employed natural materials to create a passively ventilated theatre which sits harmoniously within the wooded setting. It is constructed of cross-laminated timber and clad with wood fibre panelling, which was machine cut offsite from sheets to reduce waste, and pieced together by hand almost as a single piece of joinery would be. The CLT frame was chosen for its cost effectiveness and to reduce time on site; its specification has ensured a saving of 40 tonnes of CO₂ compared with traditional blockwork construction.

—Jonathan Tuckey, director, Jonathan Tuckey Design

Ground floor plan



Section A-A



0 1m

0 1m

Analysis

10 points

Some of the wall panels are perforated for ventilation, others are padded – Charcoalblue was Tuckey’s adviser on theatre technics – and, in a departure from typical theatre ordering, the seats rise in four asymmetrically set-out blocks of benches, with a dog-legged central aisle. There is a lolling, flexibly acoustic ‘tent’ overhead.

—Jay Merrick, Architects' Journal

1. **Call out** each of the different wall treatments in the image to the right and **explain** the role of each in enhancing or detracting from the acoustic quality of the space.

Tent

Padded

Perforated

CLT

Window



Wall treatment detail.

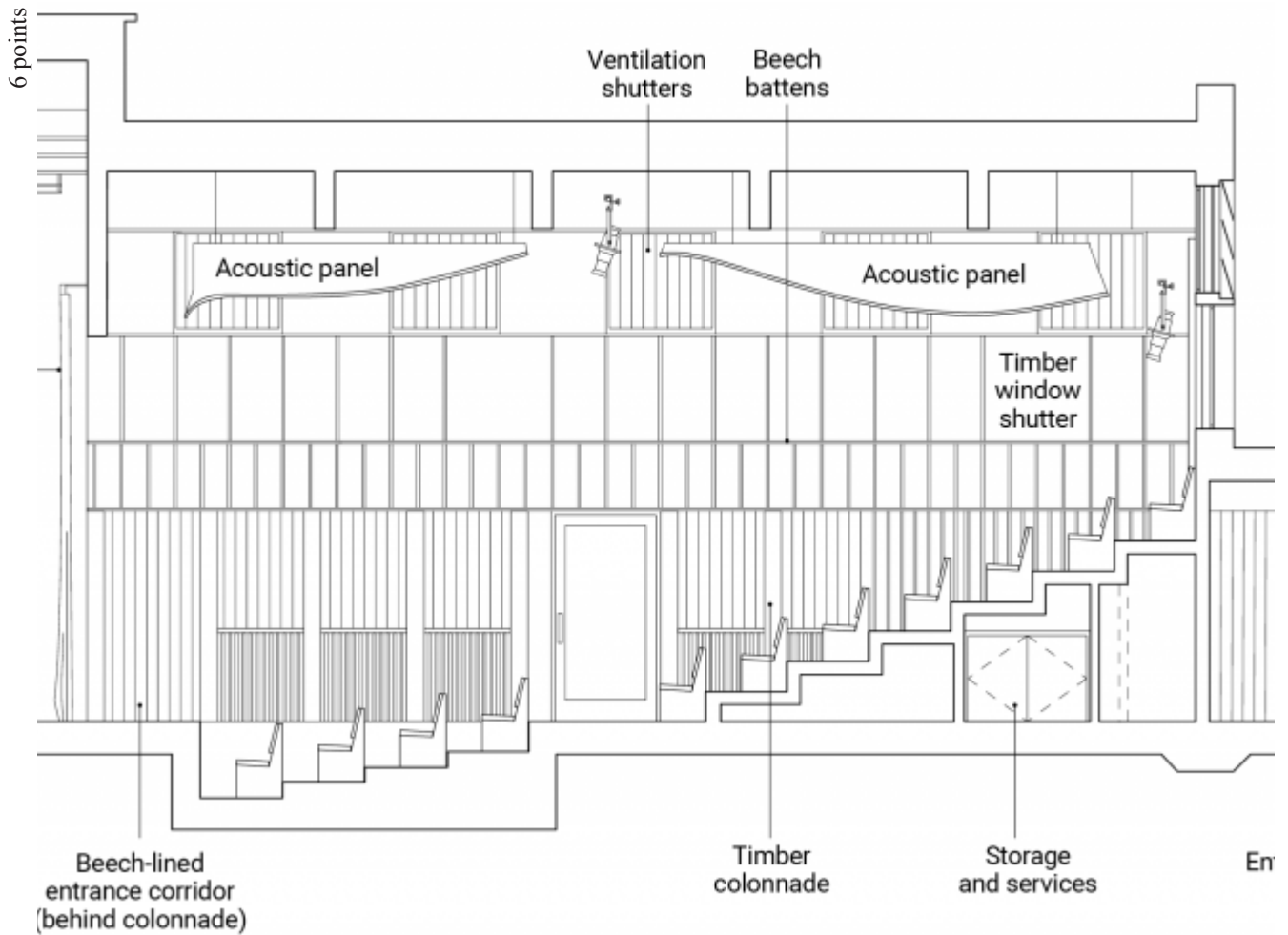
acoustic tent

padded and perforated panels

exposed clt, window, and padded panel

perforated panel and exposed CLT with vertical battening

2. The tented ceiling is designed to enhance the acoustics of the hall. Use the section below to perform a ray tracing analysis of the theatre. Describe how well the ceiling distributes the sound throughout the hall.



Reflection

3. a.) Describe in one word the acoustic goal of the theatre _____.

b.) Describe in one word which of the three auditoria types this theatre is modeled upon _____.

Extra Credit

Explain the materiality and acoustic role of the theatre's back wall.

Advice

6 points

4. "Designed to host assemblies, music recitals and drama productions, the development comprises three unique spaces—a 160-seat auditorium, an outdoor amphitheatre, and a congregating space at the entrance portico—creating a building which is animated on all sides."

— Jonathan Tuckey, director, Jonathan Tuckey Design

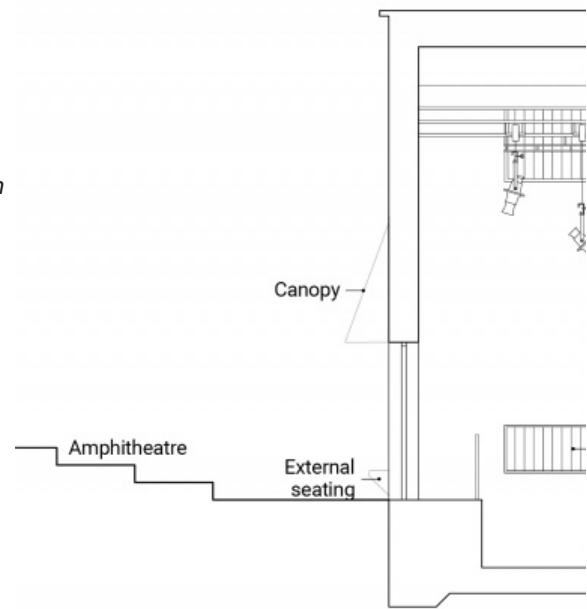
Give three sound (pun!) pieces of advice and/or warnings for outdoor performance in this space.

1

2

3

Section A-A



(above) Section through the amphitheatre and
(below) amphitheatre in use.