

Arch 464
ECS
Spring 2019

Name _____

Quiz #4

"Polished Polish Hall"

Read and look at everything before you write!

For this problem you are acoustically curious about a new concert hall in Poland designed by a Spanish architect.



Illustrations and text from *Architectural Record* March 1, 2016 and photos by Iwan Baan.

CKK Jordanki

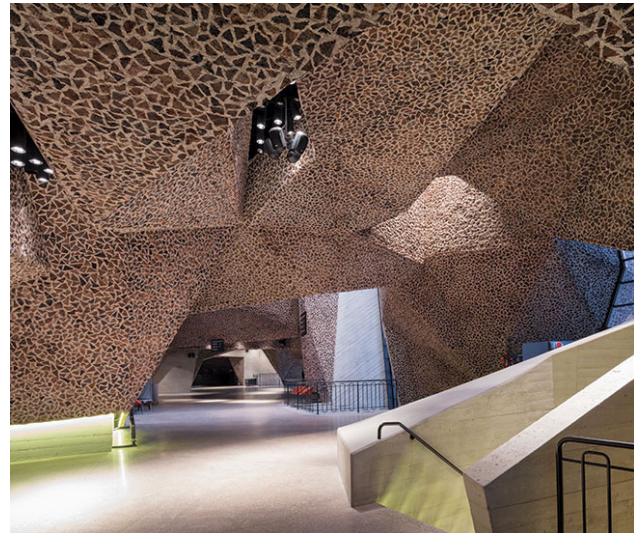
Finely Tuned: Fernando Menis's idiosyncratic forms and rugged surfaces belie a polished concert-hall experience in northern Poland.

The Centrum Kulturaino Kongresowe Jordanki concert hall emerges like an outcrop of weathered rock from an urban park in Toruń, in northern Poland (see above). Its Spanish architect, Fernando Menis, has yoked such imagery to local architectural references and technical ingenuity to establish a strong character for the building while deferring to its sensitive setting on the edge of the medieval Old Town. While the form is intended to suggest a "natural object" in the landscape, facades are accented with the red brick of the city's celebrated gothic architecture, which finds more dramatic expression here as an innovative lining to two cavernous—and acoustically refined—auditoria.

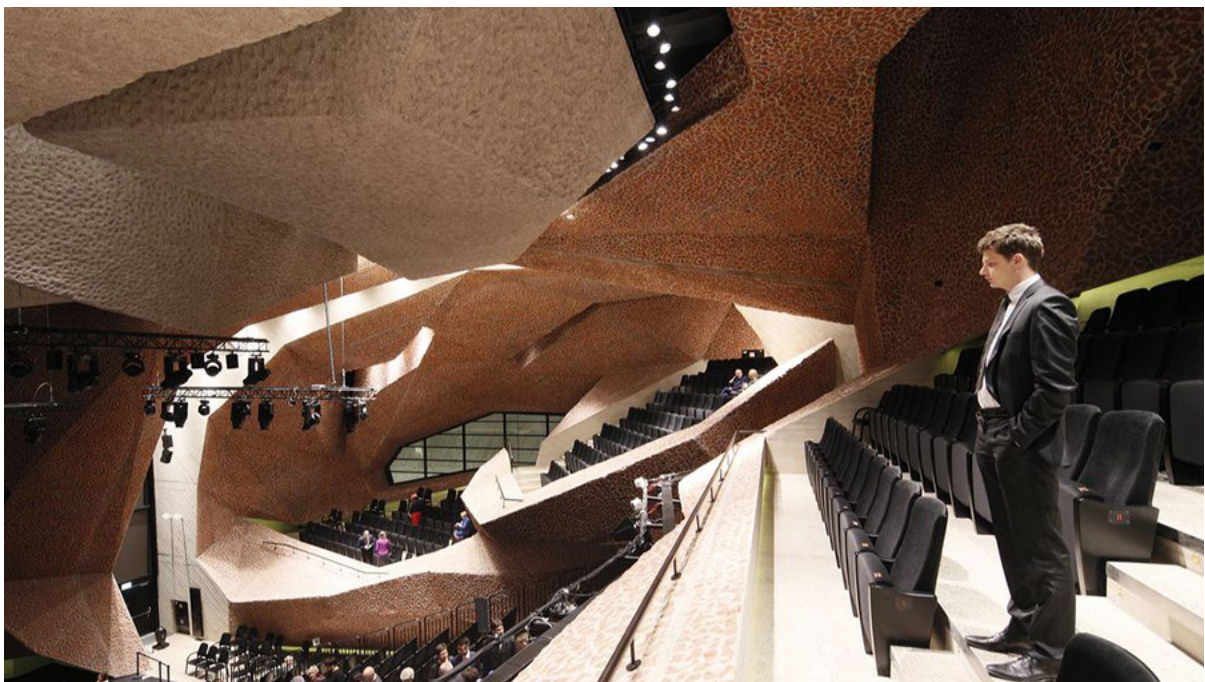
Half buried to minimize intrusion on the skyline, the building comprises four visually separate concrete forms linked above ground by glazed enclosures and below grade by a shared basement. Approaching from the Old Town, the first volume contains offices and a café, while the second and third blocks house the chamber music and main concert halls. The fourth, containing technical equipment, is set into an embankment.

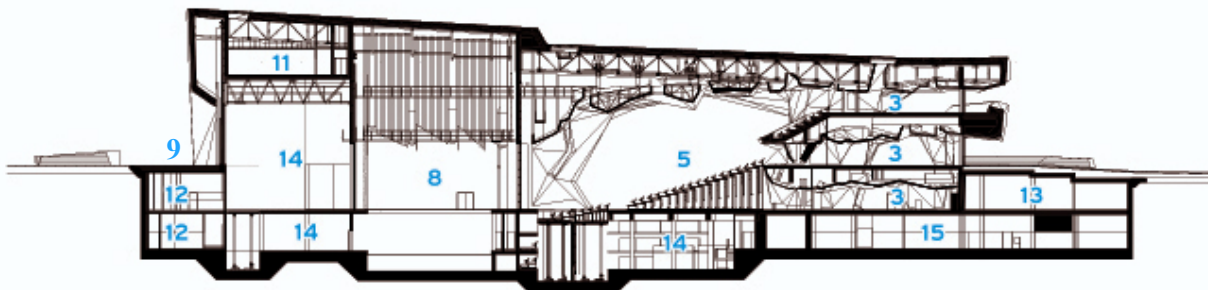
Inclined walls and cranked rooflines are crisply articulated in white board-formed concrete scored with angled control joints. Menis's treatment of these massive, almost blank forms begins a tectonic game that is further developed inside, offering multiple readings and subverting a visitor's understanding of the building's construction. On the face of each block, patches of *béton brut* are neatly excised to reveal a lumpy subcutaneous layer of broken red brick. This was created using Menis's own "picado" technique, in which masonry fragments are cast in concrete and the surface then chiseled with pneumatic drills to give a flush but undulating texture. The abraded aggregate is immediately familiar, resembling the predominant material of Toruń's gothic Old Town but made strange by its contemporary reinterpretation. The brickwork is a "tribute to the history of Toruń," says Menis, "but demonstrates that it is possible to be innovative while respecting the past."

Rugged picado lines deep angular openings in the facade. A cut into the base of the largest block marks the main entrance, while another creates a balcony in the overhang above. Beyond glazed entrance screens, the irregular planes of picado continue inside, forming foyers with crazily canted walls and emphatic bends and bulges in the ceiling. The red brick of the exterior, speckled with purples and burnt blacks, is here replaced by dark stone, reversing the chromatic balance. This porous volcanic tufa, characteristic of Menis's home, Tenerife, Spain, in the Canary Islands, provides acoustic absorption in noisy public areas.



—Chris Foges

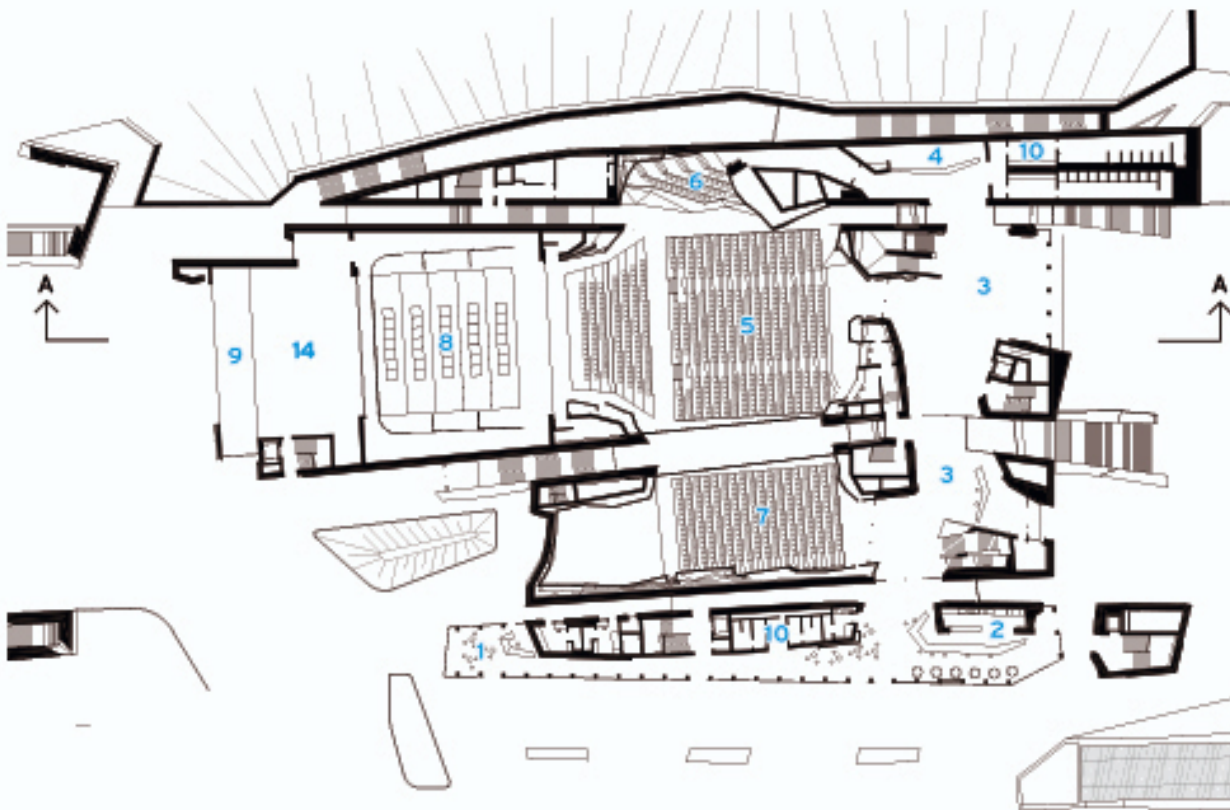




SECTION A - A

0 30 FT.
10 M.

- | | |
|---------------------|------------------|
| 1 RECEPTION | 9 EXTERIOR STAGE |
| 2 CAFÉ | 10 RESTROOM |
| 3 HALL | 11 REHEARSAL |
| 4 COAT CHECK | 12 DRESSING ROOM |
| 5 MAIN CONCERT HALL | 13 TECHNICAL |
| 6 BALCONY | 14 STORAGE |
| 7 CHAMBER HALL | 15 PARKING |
| 8 STAGE | |



FIRST-FLOOR PLAN

0 30 FT.
10 M.

Analysis

4 points

1a. The main concert hall can be tuned by lowering five large white shells, known as cupolas, to vary the reverberation time between 1.2 and 1.85 seconds. The other hall is for chamber music. What should its reverberation time be?

T_R for Chamber Music Hall: _____

1b. Give thorough acoustical explanations for how the glass and wood side walls, rugged faceted balcony façades and ceiling sections, and black upholstered seats enhance or detract from the acoustic quality of the space.



Performer's view of the main concert hall.



View across main hall to wood panel side wall.

1 Walls

2 Rugged stuff

3 Seats

2. This conference room (not shown in plan or section) may be acoustically quirky and may be challenged to meet its acoustic goal and desired reverberation time. Discuss each acoustic aspect of the room mentioned below.

3 points



Conference room with board-formed concrete walls and picado ceiling

1 Potential quirk

2 Acoustic goal

3 Desired T_R

Advice

4. The CKK Jordanki is planning on holding summer outdoor concerts in the rear paved courtyard (below, served by the exterior stage-9 in the plan and section on page3). Give three sound (pun!) pieces of advice and/or warnings for outdoor performance in this space.

3 points



1



2



Exterior stage opening from park (above) and courtyard surface.

3