

Arch 464
ECS
Spring 2007

Name _____

Quiz #4

"Is a Bull Ring Suitable for Symphony?"

For this problem you are an outspoken acoustic critic for an English architectural journal. Your assignment is to assess the strengths and weaknesses of the new Congress Center in Badajoz, Spain, designed by the young firm *selgascano* (José Selgas and Lucia Cano). This new performance venue is located within one of the bastions of the city's ancient fortifications that was the site of a historically significant bullfighting ring until it was razed in the 1980s. Unfortunately, your only source of information on the Center is an **Architectural Record** article and accompanying photographs published in November 2006. Have at it!

READ THE ENTIRE QUIZ FIRST!



Site plan. North is down!



The Badajoz Congress Center viewed from the west.

Although Spanish architects are well acquainted with the intricacies of introducing contemporary buildings into historic urban fabric, the site for the new Congress Center in Badajoz posed unprecedented difficulties. Here, in the provincial capital of Spain's relatively poor, rural, and isolated Extremadura region, an 1857 bullring once stood. The arena (demolished in the 1980s) had risen within the walls of a five-sided 18th-century bastion, erected to defend the city's strategic position near the Portuguese border. In the two intervening centuries, urban expansion had embedded those elaborate fortifications.

The painful history associated with the bullring complicated the formal challenge posed by the project's open-competition brief. In August 1936, Badajoz was the site of one of the Spanish Civil War's first major battles and, in this arena, Franco's forces executed hundreds of Republican prisoners. Many in the city still hesitate to dwell on that traumatic past, exhibiting a reluctance shared by the leaders of the region's current Socialist government, this project's clients. While repudiating Franco's dictatorship, they skittishly avoid mention of the killings in publicity about the congress center, preferring to emphasize its benefits on the local economy, culture, and tourism. Others, however, including opposition leaders of the United Left party, protested its construction, calling for a memorial on the site.

With a scheme that skillfully navigates the conflicts of memory, denial, and the demands of progress, Madrid architects José Selgas and Lucía Cano won the competition—their first important commission. Their firm, selgascano, has since won competitions for congress centers in Placencia, also in Extremadura, and the Spanish coastal city of Cartagena, and is building public housing in Madrid. At Badajoz, they carefully inscribed an innovative structure within the outlines of the original bullring, establishing a fresh and dynamic urban presence that pays homage to the past and the future. The approach, recalls Selgas, came from the realization that "what we were looking for was right before our eyes." The challenge became how to "do as little as possible" in order to keep the character of the site legible.

David Cohn is RECORD's Madrid-based correspondent.

The auditorium, by contrast, offers cool tones, with blue upholstered seats and walls of translucent polycarbonate strips, backlit by fluorescent tubes. This spectacular circular space rises to a glazed oculus, 40 feet in diameter, with a suspended acoustic ceiling of alternating slats of wood and transparent polycarbonate, combining visual transparency with acoustic reflectivity. (A horizontal *toldo*, or curtain, yet to be installed, will black out daylight.) This riff on the Pantheon's oculus harks back to Selgas's residency at the Spanish Academy in Rome in the 1990s, when Cano was working in Madrid for her father, the noted architect Julio Cano Lasso.

The hall's circular form and glowing polycarbonate walls presented acoustic challenges. Consultant Higinio Arau, who has played a key role in defining the sound quality of many of Spain's new performance spaces, gave the suspended ceiling parallel folded planes, he says, "to transform harmful reflections from the walls and balconies at the back of the hall," eliminating uneven focal points of sound. He studied the dynamic elasticity, density, and buffering qualities of the Plexiglas walls, adjusting the thickness to match high-quality wood in response to low frequencies.

The architects hung the ceiling from a magnificent contraption of tensile, splayed wires—recalling a suspension bridge or the inside of a piano—which remains visible from sections of the upper balconies. Alternating flanges of polycarbonate and steel stiffen the mechanism, while

Rendered in translucent plastics, the scheme recreates the concentric volumes of the former bullring: A cylindrical lattice of fiber-glass-reinforced polyester-resin tubes encircles a drum clad in translucent Plexiglas tubes over clear glass panes. The inner drum, containing the auditorium, takes its footprint from the former *albero*, or ring of sand, where bullfights once took place, while a roofless circulation path between the layered cylinders occupies the street-level zone of the former grandstands. As Selgas says, this relationship reverses the bullring's disposition of spectators versus open space. Much of the 180,000-square-foot congress center lies underground, including its lobby, which visitors reach from the entry plaza via a stair descending beneath the red underside of a curving, cantilevered canopy. The 1,000-seat main auditorium, rising from this lower level to fill the inner drum, can accommodate opera, theater, orchestral music, and conferences. The architects have tucked secondary spaces—a flexible 400-seat auditorium, a café, meeting rooms, and a rehearsal hall for the resident Orchestra of Extremadura—into the surrounding bastion, accessed from the ring of outdoor circulation.

"We used two families of materials: those proper to the bastion, like concrete and packed earth, and lightweight ones proper to the void," Selgas explains. In his view, the project's low budget of \$25 million, dictated by the region's poverty, provided the freedom to experiment with money-saving plastics. Light and ephemeral in appearance—like a circus tent or fair attraction—the structure distinguishes clearly between old and new.

The lobby adds to that festive effect with multicolored fluorescent lighting and deep-red flooring (made from cork), contrasting dark, egg-plant-colored plaster ceilings, and white walls. Illuminating these vibrant surfaces, daylight enters through a long, curving trench skylight and from the stairs to the outdoor circulation ring. On the auditorium's mezzanines,

Project: Congress Center, Badajoz, Spain JG Asociados (installations); Pedelta (polyester structure)
Architect: selgascano—José Selgas, Lucía Cano, principals **Acoustic consultant:** Higinio Arau
Engineers: Fehcor (structural); **General contractor:** Joca-Placonsa

keeping the sheer luminosity uncompromised. Throughout the building, Selgas and Cano's inventive systems allowed them to mount plastic materials while retaining translucency, as in the auditorium, where backlit wall panels project on thin stainless-steel tubes from the stud frames. For the drum's exterior, they heat-molded the Plexiglas tubes to create curves and mounted them discretely with steel bracket rings on light vertical steel trusses, separating the tubes from the cylinder's glass inner walls. The resulting continuous surface remains uninterrupted by structural members.

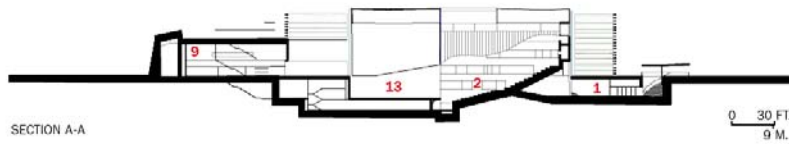
The architects skillfully developed the formal implications of the circle, dramatically deploying form, materials, color, and light to underscore its nonorthogonal geometry. Particularly dashing are the curving cantilevers, including the 96-foot-long entry canopy. The building's abstract planes of color evoke the formal logic of early Modernism, from De Stijl to Le Corbusier, while the bold red recalls the bullfighter's cape, the blood shed in this arena, and the blinding, late-day sunlight in the ring. In subtle ways, a shadow of the tragic memory emerges—at least, for those choosing to sense it—within this sparkling, local cultural mecca's festive spirit. But so far, no one has offered a more forthright acknowledgement of Badajoz's past. ■

Sources

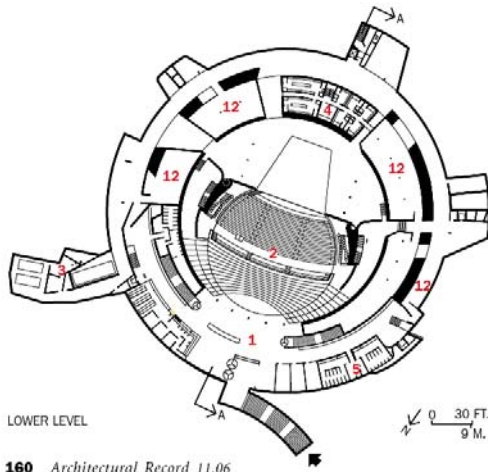
Floor covering: Forbo; Mondo
Walls: Degussa; Fiberline
Plumbing fixtures: Duravit; Roca

For more information on this project, go to Projects at archrecord.construction.com.

PHOTOGRAPHY: © ROLAND HALBE



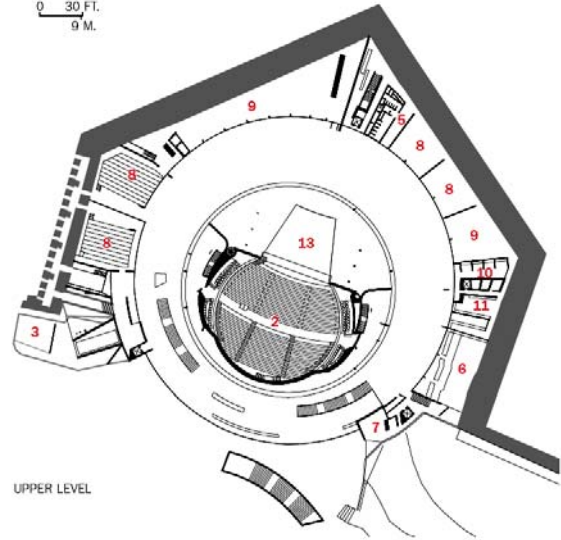
SECTION A-A

0 30 FT.
9 M.

LOWER LEVEL

0 30 FT.
9 M.

1. Lobby
2. Auditorium
3. Service entry
4. Dressing rooms
5. Bathrooms
6. Café
7. Box office
8. Secondary hall
9. Exhibitions
10. Storage
11. Kitchen
12. Mechanical
13. Stage



UPPER LEVEL

160 Architectural Record 11.06

Analysis of the Auditorium

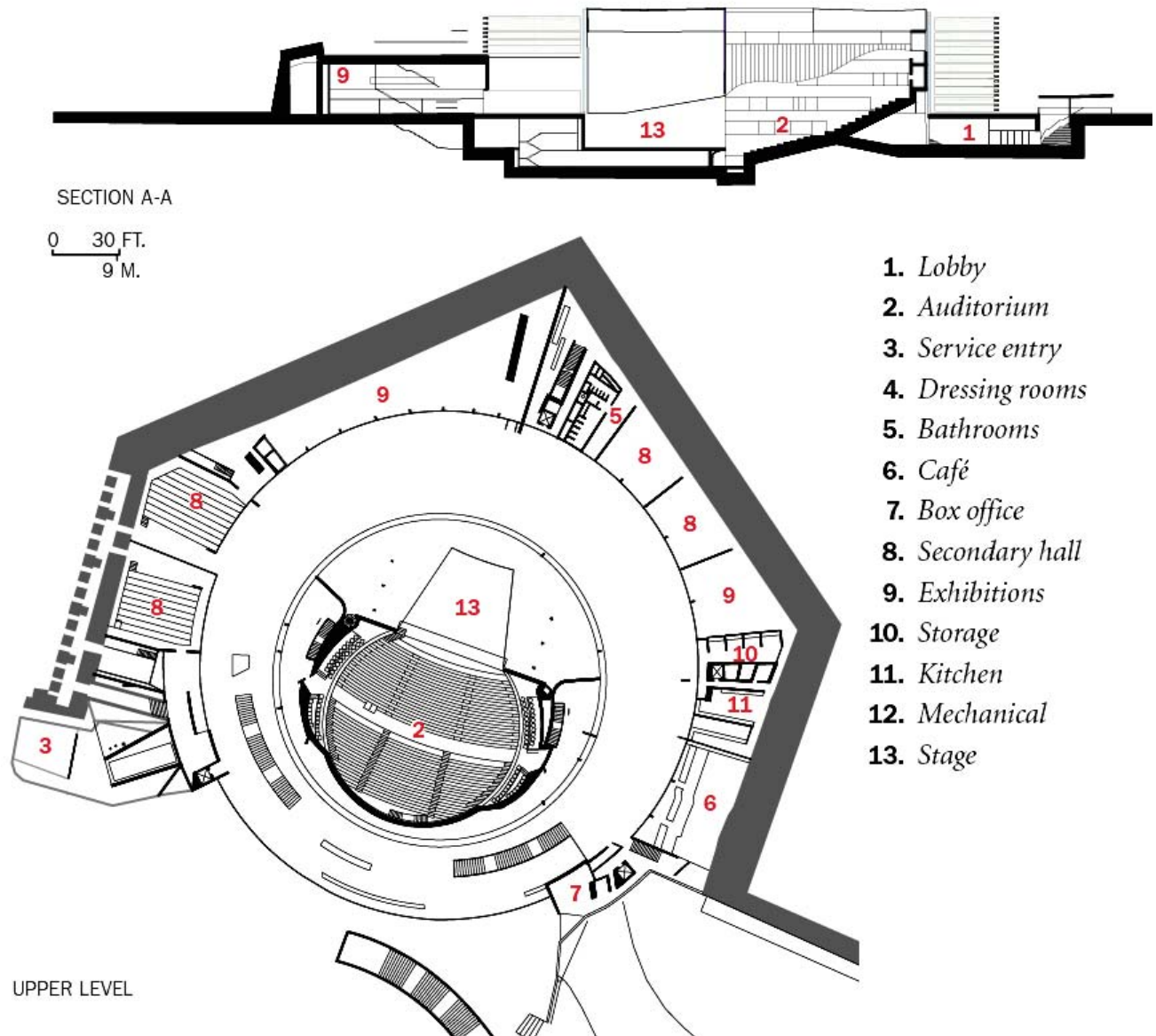
2 pts

1. **Discuss** two obvious problems associated with the configuration of the auditorium (plans and section above).

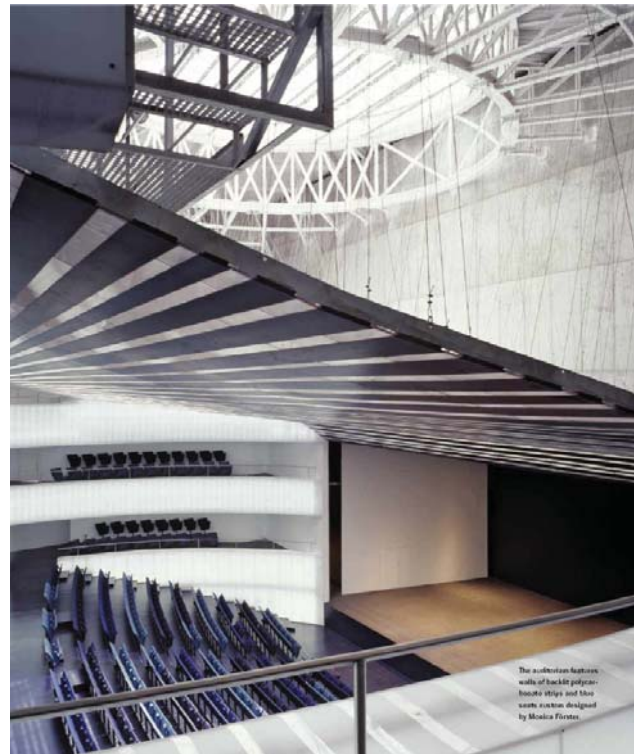
2. The architects claim that the main auditorium can accommodate "opera, theatre, orchestral music, and conferences." **Indicate** which of these four declared functions you think it's most suited. **Explain** why. **Tell** how it could be adapted to support the other(s). **Describe** two possible strategies.

4 pts

3. **Draw and critique** ray diagrams for critical sound paths from the stage to the audience.
 2 pts **Comment** on consultant Higini Arau's acoustic solution and why you agree or disagree with it.



2 pts 4. Interior detail contributes to quality of sound. **Sketch** an impulse response diagram for a center seat near the back based on your understanding of the main auditorium. **Explain** your diagram in terms of architectural features and sound quality.



The auditorium ceiling viewed from above and below.