

Arch 464  
ECS  
Spring 00

Name \_\_\_\_\_

Quiz #4

## "Music in the Cirque du Soleil"

For this problem you are both a performer in string quartet that plays authentic 17th century instruments and the quartet's acoustics expert. The group has booked a gig at the new Cirque du Soleil Theatre in Downtown Disney ("a mock-urban area of Walt Disney World"), Orlando, Florida. The theatre is usually used for circus performances and it's notable that no acoustician was employed as a member of the design and construction team.

The theatre is housed in a cylinder that is 184 feet in diameter and 90 feet high. The only significant acoustically reflective surface in the space is the 50' x 25' wall behind the stage which has an absorption coefficient of 0.01. The audience ( $\alpha = 0.96$ ) covers 12,000 sq.ft.; the wall ( $\alpha = 0.86$ ) area is 52,000 sq.ft.; the ceiling ( $\alpha = 0.96$ ) is 26,600 sq.ft.; the exposed floor and stage ( $\alpha = 0.07$ ) is 14,600 sq.ft.; and the volume of the space is 2,400,000 cubic feet.

Your job is to critique the existing theatre as a venue for acoustic (no electronic enhancement) performance of a string quartet and to suggest improvements that can be made for your performance without permanently altering the space.



*Exterior view of Cirque du Soleil*

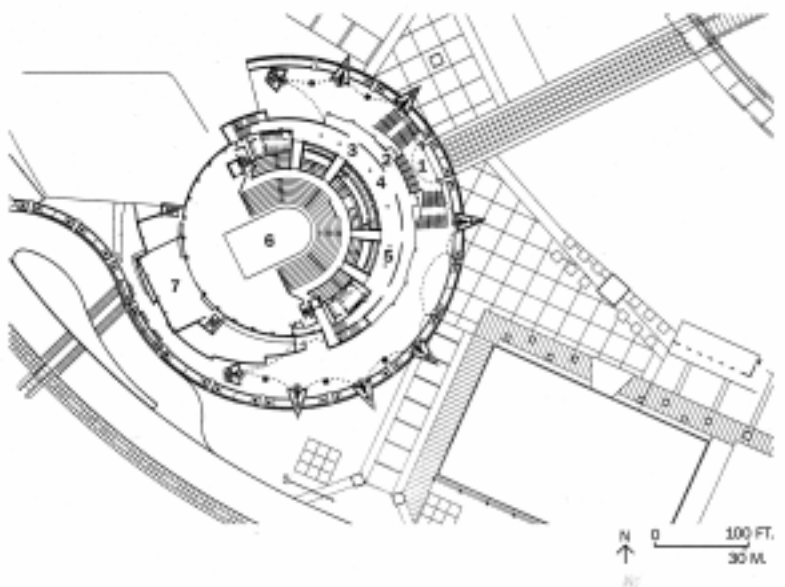


*Interior view of Cirque du Soleil performance space*

## Critique of Existing Space

- 5 pts
1. Calculate the reverberation time for the existing space and comment on its suitability for chamber music (string quartet) performance. Categorize this space as one of the three prototypical hall configurations and give its inherent assets and liabilities. Explain the other strengths and weaknesses of this acoustic design for your group's performance.

1. Entry
2. Balcony
3. Lobby
4. Concessions
5. Retail
6. Performance space
7. Rehearsal hall



## Suggested Temporary Improvements

5 pts

2. Describe temporary installations you can make in the performance space that will improve its acoustics for your quartet's sold-out concerts. Describe what acoustic problem each addresses and how the installation mitigates the problem. Make a sketch(es) in plan, section, or perspective that demonstrates your improvements.