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## DESIGN

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## POPQUIZ

### LDS Conference Center Welcomes the Faithful

by Clair Enlow

Crowds and sacred places have always gone together. Perhaps no major religious group has ever been called to accommodate so many, so well, as the Mormons.

Founded in upstate New York only a century and a half ago and based in Salt Lake City, Utah, The Church of Jesus Christ of Latter-day Saints (LDS) now counts 11 million members around the globe, and expands at the rate of 300,000 per year.

The Salt Lake Temple and its adjoining complex of buildings is their St. Peter's, the home church for the fastest growing religion in the world. This home base is not just a place of pilgrimage and worship. It's for conferences, assemblies, concerts, pageants, and a steady stream of wedding celebrations.

There has never been enough room. But now, in a new conference center that covers most of a 10-acre (4-hectare) block, there is a lot more.

#### Room for the Multitudes

It's an architectural miracle. In one sweeping auditorium of unprecedented size, 21,000 faithful can sit comfortably and clearly hear the words and see the face of LDS president Gordon B. Hinkley.

Sharing the huge rostrum is seating for the 158-member General Authorities and the 352-voice Mormon Tabernacle Choir, all backed by a gleaming 125-rank pipe organ.



*LDS conference center. Photo: Timothy Hursley*



*Visitors swarmed the rooftop park and terraces during the opening festivities. Photo: Timothy Hursley*

Click on thumbnail images to view full-size pictures.

For Leland Gray, senior design architect for the church, the effect of seeing the hall filled to capacity is beyond words. "I wanted make sure they all feel at home," he says. "I think we've achieved that."

He achieved it with the assistance of Portland, Oregon-based [Zimmer Gunsul Frasca Partnership](#) as design architect and [Auerbach & Associates](#) of San Francisco, which was responsible for theater design and architectural lighting.

In addition to the main auditorium, with its record-breaking capacity, the conference center also contains a 900-seat theater and an underground 1,400-car parking structure.

### **A Public Accommodation**

Unlike the temple and other fixtures of the faith that fill Temple Square in the block across the street, the conference center and all surrounding plaza and grounds are open to the public.

The design team, which includes Philadelphia-based Olin Partnership as landscape architect, chose to mold the enormous mass of the center into a kind of land form, a plateau on which to climb, stroll, linger and look out.

Every day, thousands of church members and visitors stream up and down the ramps, look down from the terraces and explore the features of the four-acre (1.6-hectare) park on the roof.

A series of strategic focal points and the accessible majesty of the facade invite crowds to the top to commune with the peaks of the Wasatch Mountains, the nearby dome of the state capitol building, and the skyline of Salt Lake City.

The entire composition resonates with ancient temple forms and cultures. It might be at home in a Near Eastern desert or in a Mesoamerican jungle. Design principal Robert Frasca worked with Philadelphia landscape architect Laurie Olin to shape the imposing mass and



*The terraced roof of the new conference center of the Church of Jesus Christ of Latter-day Saints, designed by the Zimmer Gunsul Frasca Partnership.  
Photo: Timothy Hursley*



*The new conference center occupies most of a 10-acre (4-hectare) block in downtown Salt Lake City, Utah.  
Photo: Timothy Hursley*

orchestrate a series of outdoor experiences on the site.

The expanse of reinforced concrete, sculpted and terraced into a base for water features and plantings, also brings to mind recent feats of engineering such as the Washington State Convention and Trade Center in Seattle.

The closely ranked and deeply recessed windows and the peristyle-like entrances bring plenty of filtered light into the public areas of the complex while reinforcing the monumentality of the building.

### **Building as Landform**

Given the scale and complexity of the conference center and the need for contextual sensitivity, it would be practically impossible to produce a design that reads as a geometric whole.

Instead, the massing and directional features combine as a kind of monumental village, a city of God. The main auditorium is wedged into one corner of the block, while the opposite corner is eroded to accommodate a street-level open space and entrances to the complex.

The east and west sides of the conference center are designed to reflect the nearby mountain scenery, stepping down in a series of tiers planted with alpine trees and ground cover.

As part of the project, Olin and LDS senior landscape architect Mark Williams also worked with the city to daylight a long-buried creek that runs between the conference center and Temple Square.

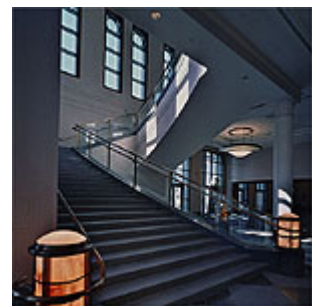
One of the primary design goals for the center was to avoid overwhelming the temple and other buildings on the adjacent historic square. As if directing the ebb and flow of the daily crowds, a tower at the edge of the mesa and at the center of the south side of the block acts as a landmark, a focal point, and a beacon of light.



*One sweeping auditorium of unprecedented size holds 21,000.  
Photo: Timothy Hursley*



*Sharing the huge rostrum is seating for the 158-member General Authorities and the 352-voice Mormon Tabernacle Choir, all backed by a 125-rank pipe organ.  
Photo: Timothy Hursley*



*The public circulation areas have a neo-Georgian grace, like a government building.  
Photo: Timothy Hursley*

The tower's assertive verticality and diminutive size, in relation to the entire building, serves to emphasize the mass of the conference center as a land form, while minimizing its overall architectural presence.

The theme of the project is "Light and Truth," says Gray. There are no specific metaphors in the elements of the building or landscape, he adds, but rather a "powerful geometry that allowed us to produce a focus on the temple."

The tower, lined up with a water feature cutting down through the facade below and a pair of gate-like beacons at the edge of the street, are all on axis with a wide walkway that runs through the center of Temple Square, between the temple itself and the Mormon Tabernacle and assembly building.

Directly across from the temple entrance is the main entrance to the conference center, projecting out from the building in a kind of portico consistent with the recessed windows in the structure.

The focal points and well marked approaches to the conference center and roof park serve to emphasize the primacy of the fixtures on Temple Square, while organizing the expanse of the conference center facade.

The entire block now functions as a city park. Church and city collaborated to make it a public amenity and an attractive destination. From its various promontories, visitors take in the sweeping views.

Gray is looking forward to the 2002 Winter Olympics in Salt Lake City, confident that the conference center will have a role to play.

### **Fulfilling a 150-Year-Old Ambition**

Brigham Young himself, who led the Mormons to the Utah Territory in the middle of the 19th century, laid out the large blocks and wide streets of the city, which is also the state capitol. Temple Square is ground zero of the street numeration for Salt Lake City.



*The hallways are filled with abundant natural light.*

*Photo: Timothy Hursley*



*Stone busts of former presidents line up along the outer wall.*

*Photo: Timothy Hursley*



*The conference center as seen from Temple Square.*

*Photo: Timothy Hursley*

Click on thumbnail images to view full-size pictures.

The temple is the work of Truman Angel, the first church architect. He was sent by Brigham Young to Europe and was impressed by Saint Peter's in Rome and by the work of Christopher Wren.

Gray, who has had a hand in the design of many recent temples, once had a practice in Portland and was an admirer of [Pietro Belluschi](#), who also influenced the work of Frasca.

According to Gray, the conference center was first discussed in 1861. Brigham Young wanted an assembly hall that would seat 20,000. But the engineers of his time could not deliver at that scale.

Instead, in 1867, the church got the present tabernacle, which seats 6,000, and that has been the limit on seating until now. Twenty-one-thousand-seat, oval shaped arenas are not uncommon. But arranging this many seats in a fan-shaped configuration with a single focal point, centered on a speaker at the pulpit, is unique in the world.

The structure is designed to last at least the next 150 years. The panels of granite that cover the exterior were cut from the earth near the source of the granite used during the 40-year construction of the temple.

### **An Engineering Marvel**

Yet the new facility accommodates the latest technology for acoustics, lighting, theatrical systems, telecommunications, broadcast audio-visual, and security. In the last century, structural and electrical engineering have caught up with the visions of Brigham Young.

Dramatic performance is close to the heart of Mormon culture. Prophetic speech-making, elaborate pageants that reenact scripture, and educational activities involving whole congregations and different levels of church hierarchy are all part of LDS life. In keeping with this tradition, the entire conference building is a stage.

The total area in the conference center is 1.2 million square feet, (108,000 square meters) with interior volume of 9.43 million cubic feet (267,000 cubic meters).

The structural system for the concrete building, designed by [KPF](#) of Seattle, includes 10 radial trusses, each up to 287 feet (86 meters) in length and weighing up to 550 tons (500,000 kilograms). The king truss alone weighs 621 tons (560,000 kilograms).

There are a total of 116,000 cubic yards (88,700 cubic meters) of reinforced concrete in the conference center and 27,000 tons (24,300,000 kilograms) of steel, including reinforcing bar, structural steel, and miscellaneous pieces. The perimeter walls and shear walls are up to 30 inches (75 centimeters) thick.

### Supreme Power

The numbers that go with the electrical systems are equally mind boggling. The building contains 50,000 miles (80,000 kilometers) of wire and 780 miles (1250 kilometers) of conduit. There are 330 panels for power circuits and more than 300 panels for lighting.

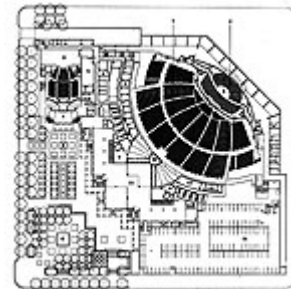
A tunnel system provides for future cable installation and connects with an under-stage mechanical pit used for theatrical machinery and special effects during pageants.

Because of the enormity of the necessary system, an Ethernet network — with multiple levels of redundancy — was chosen to transmit lighting control commands throughout the building. Some signal distribution runs are as long as 2000 feet (600 meters), and use fiber optic cable as a backbone.

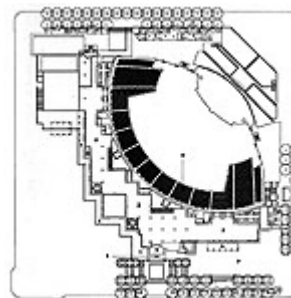
If there is ever an interruption in power supply, the show will go on. There is an uninterrupted power supply for critical systems and an emergency diesel generator with an output of 2000 kilowatts.



Site plan.  
Image: Zimmer Gunsul Frasca Partnership



Orchestra level.  
Image: Zimmer Gunsul Frasca Partnership



Terrace level.  
Image: Zimmer Gunsul Frasca Partnership

## Dramatic Light and Sound

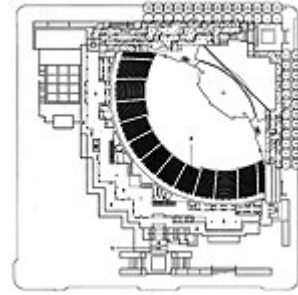
For seating capacity and sheer size, the main auditorium has no peer in the world. It is seven times the size of the Metropolitan Opera House in New York.

The distance from the pulpit to the last row of the third tier of seats is the length of a football field. But unlike in a football stadium, people seated in the last row are able to read the facial expressions of a speaker at the pulpit, and hear him as if he is speaking directly to them. For those who do not speak English, there are 60 booths for simultaneous language translation.

A sophisticated signal delay system provides localization of the speaker's voice to the rostrum. An electronic reflected energy system creates and controls reverberation, so that the system gives a perceived shape to the auditorium that is quite independent of its physical dimensions.

While sound is amplified throughout the auditorium, certain parts of the audible spectrum are delayed in the seating areas farthest from the rostrum. While a voice can be heard with intimate clarity, the space "sounds" every bit as large as it actually is.

Lighting is used strategically throughout complex, in all public areas as well as performance spaces and on the exterior. In the main auditorium, a dimmed incandescent downlight system provides house lighting, wood grill wall panels are accented with light, and gold-leafed fiberglass sconces are lit from within. Lighting is controlled by software to respond differently to large and small events.



*Balcony level.  
Image: Zimmer Gunsul  
Frasca Partnership*



*North-south section.  
Image: Zimmer Gunsul  
Frasca Partnership*

Click on thumbnail  
images  
to view full-size pictures.

## Stagecraft

"The interior of this building was designed to be a grand vista with an intimate view," says S. Leonard Auerbach of the theater design firm Auerbach & Associates. "There is no visible structure."

"As a design tool for creating intimacy and good sight lines," he notes, "we applied the geometric physiognomy of the human being. We took the geometry of normal forward vision from the pulpit to make sure the full scope of the seating was in view of the presenter."

Auerbach, whose design credits include the new [Hayden Planetarium](#) at the American Museum of Natural History, the Judy and Arthur Zankel Hall at Carnegie Hall, and the Santa Fe Opera, designed a unique rostrum for the LDS Conference Center.

The 150 by 80-foot (45 by 24 -meter) structure, which is 30 feet (9 meters) tall, is designed to hold the 352-voice Mormon Tabernacle Choir and the 158-member General Authorities of the LDS Church, but it can be dismantled and removed to accommodate large theatrical productions.

The rostrum separates into 92 modules, each weighing thousands of pounds and mounted on an air caster system. Each piece is moved offstage through pivoting walls 20 feet (6 meters) wide by 70 feet (21 meters) tall. The process is reversed to reassemble the rostrum into a seamless whole.

Slender robotic video camera pylons telescope up and down, enabling the church to broadcast live events with minimal sight line intrusion to the pulpit. Video cameras are controlled remotely from the broadcast camera control suite.

When needed to enhance visual communication, two 20 by 30-foot (6 by 9-meter) video screens drop down on either side of the rostrum.



*The building's landmark beacon.  
Photo: Timothy Hursley*



*Theater entrance.  
Photo: Timothy Hursley*



*Conference center interior.  
Photo: Timothy Hursley*



*The panels of granite that cover the exterior were quarried near the source of the granite used for the Salt Lake Temple.*

Auerbach & Associates designed a grid system the size of half of a football field to fly scenery over the stage. It supports a host of remote-controlled rigging and hoisting elements, similar to a modern opera house.

The 911-seat proscenium theater, located in an adjacent corner of the building, is the home of the Promised Valley Players. It has a fully rigged stage house with a 75-foot- (23-meter-) high grid.

The smaller theater is also used for training and overflow worship services. Along with those in the main auditorium, its 608 dimmers are integrated with the building-wide Ethernet-based lighting control network.

### **The Grand Halls**

Unlike the main auditorium, where structure is not expressed, the public circulation areas offered more freedom of design interpretation. They have a spare and stately neo-Georgian grace, more like a ceremonial government building than a convention center or a church.

The liberal use of steel and granite reflect the abundant natural light with solid authority. Custom metalwork and light fixtures, overscaled, custom-designed furnishings, and stone busts of former presidents lined up along the outer wall all accentuate the high ceilings and wide halls and stairways. Nooks and niches of more human scale allow for impromptu meetings and conversations.

Even the sound in the halls is tuned to stately grace. Gray did not want them to be quiet. "We wanted some reverberance to go along with the massive scale. People are then properly attuned to enter the auditorium."

*[Clair Enlow](#) is a writer and architecture critic in Seattle and a contributing editor to *ArchitectureWeek*.*

*Photo: Timothy Hursley*



*The terraces overlook Salt Lake City.  
Photo: Timothy Hursley*

Click on thumbnail images to view full-size pictures.

## **Project Credits**

Owner: The Church of Jesus Christ of Latter-day Saints  
Architect: Zimmer Gunsul Frasca Partnership  
Robert Packard III, Partner-in-Charge Robert Frasca, FAIA, Design Partner  
Associate Architect: Gillies Stransky Brems Smith Architects  
Theater Consultant: Auerbach + Associates  
Landscape Architect: Olin Partnership  
Structural Engineer: KPFF Consulting Engineers  
Mechanical/Electrical: CHP & Associates  
Civil Engineer: EWP Engineering  
Acoustics; Jaffe Holden Scarbrough Acoustics, Inc.  
Lighting: Auerbach + Glasow  
Telecommunications: Sparling  
Broadcast Audio/Visual: National TeleConsultants  
General Contractor: Legacy Constructors

