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TO HEAR, TO SEE AND TO BE SEEN?

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This paper proposes that opera house design succeeds when the audience not only sees the faces of the singers and hears their words clearly, but also sees other members of the audience responding to the energy on stage and that being seen by the rest of the audience is very much a part of the ritual of opera.
Taking Glyndebourne as an example, this paper discusses the evolution of that auditorium design from concept to completion together with the varied emphases of seats in different parts of the house

Influence of social function on form of auditorium

The Opera House has always performed a significant social function as a meeting place. Who was in the audience was as important as the activities on stage and there was little visually to distinguish between the two worlds particularly during the era of Opera Seria when the even illumination of audience chamber and stage made the court audience as much part of the spectacle as the performers. The sets took inspiration from the architecture of the auditorium which continued back into the stage with increased perspective.

The horseshoe auditorium form offered the rear central Royal Box a view of all members of the audience including those in the side boxes whose box fronts returned inwards towards the stage. There are many examples of Italian opera houses where the upper tiers consist only of shallow boxes and the architectural treatment and proportion of the box fronts, box dividers and height between tiers and form of illumination affects the sound and visual success of the room.

La Fenice in Venice has particularly high and flat balcony fronts and tight tier-to-tier dimensions with elaborate candelabra just above the heads of the audience, augmented by large intermediate candelabra which visually reinforce the enclosing surface of the box fronts. Teatro dell'Opera, Rome has a greater tier-to-tier dimension than La Fenice, with arched supports to the tier above set back from the box fronts creating a ledge from which numerous candelabra are suspended, and opening up the visual wall of the balcony fronts to read the wall of the auditorium.

Some twentieth century examples of opera houses, where the engineering solutions are no longer limited to short spans and a cellular enclosing structure, have reinterpreted the concept of a box

and reoriented them for sightlines, but at the expense of transmitting the performers' energy from stage to the rest of the house.
Turin, which has one box level which widens out towards the proscenium wall, focusses the box dividers on the centre of the stage to improve their sightlines, and loses the sense of community that the horseshoe achieves. The central lighting feature creates a bright centre to the stalls but the balcony fronts remain unilluminated.
Examples of stacked boxes which also rotate towards the stage to improve the sightlines from the sides rather than towards the audience, such as Cologne and Hamburg Oper, reduce the energy transmission between side audience and stalls audience because the former are turned away from the latter.
The ultimate example of limited energy flow between stage and audience is Bayeuth, where the audience are arranged in rows, the stage being the only focal point in the room.

Variety of audience
Opera is unique in merging audiences for whom different aspects of the production appeal- those with primarily a deep interest in the music, composer and singers' interpretation; those with strong visual awareness whose interest may be as much in the production as the sound; opera buffs whose knowledge enables them to compare performances, productions and opera companies, and for whom the nuances of the libretto will be significant; those who find surtitles a distraction and those who feel aided by surtitles. There are those for whom the whole experience of attending an opera will be a unique treat; for others it will be a frequent experience. Within these groups, some can afford top price seats; others will choose cheaper seats in order to attend more often.

Characteristics of various parts of the Glyndebourne auditorium
For these different subgroups of the audience, different locations in the opera house will allow for individual preferences. Those for whom the musical balance between stage and pit will choose seats where this is likely to be ideal. Some people prefer seats higher in the house to hear a good blend of sound.

Those for whom the full scenic effect is of prime importance will choose the central seats in the house - here at Glyndebourne it is possible to combine both of the above qualities in seats in the upper circle, where a clear view of the whole stagehouse is combined with well blended acoustics and a clear view of the whole pit.

The view of the pit from the upper circle arose from two aspects of the design. Firstly, the acknowledgement that many set designers are extending the acting area into the forestage and therefore the sightlines must work to there; secondly, that the architect chose the aesthetic of horizontal balcony fronts. To achieve sightlines over the circular plan geometry, the seats at the sides of the rows need to be higher, and within the horizontal aesthetic, the whole length of the rows in the upper tier were raised to this maximum height. Therefore for the seats in the centre of the rows, they have an even better than minimum view of the forestage and orchestra pit.

For those for whom being close to the performers is a priority, there are choices of the side parterre seats and the front stalls. Also to receive direct sound from the stage and as an audience member to be level with the singers, the front rows of the stalls circle give an unobstructed view of the performance whilst having the acoustic advantage of being in the main body of the auditorium. The angled seats at the sides achieve greater closeness to the stage together with the advantages above.

The performers, looking out into the auditorium, can communicate directly with the audience on the side parterre and side first circle. This is especially true when a raked stage is used, raising the upstage singers to first circle height and giving them the advantage of projecting the sound out to the auditorium over the heads of the downstage performers. The sloping floor surface also assists with the sound projection.

The box audience at the sides provide the human link back from the performer to the main body of audience. In this respect, they perform a very important function as they can be seen in the peripheral vision of the whole audience and their physical reaction to the energy and emotion on the stage transmits itself back to the other sections of the auditorium. There is a loss of sightline into the same side of the stage in order to give continuity of audience up to the proscenium. This is an issue to do with the plan form and cannot be overcome by raising the section, however the importance of energy transfer from stage to auditorium is given greater weight than 150 years ago - see examples quoted earlier.

At an early stage in the consideration of a horseshoe form for the auditorium, it was decided at Glyndebourne that the boxes nearest to the stage would be company seats for the staff members and not for sale to the public. The sightline improves as one moves away from the proscenium, however directors and set designers have to bear in mind which are the most effective areas of the stage when blocking the dramatic highlights of an opera.

Following the precedent of the old house at Glyndebourne, where there were staff boxes at the sides and the Glyndbourne box and public boxes at the rear of the stalls, there are six boxes at foyer circle level in the new house. Whilst not the best place in the room acoustically, they offer excellent views of the production together with some privacy and security to the occupants. The client requested the lowering of the rear boxes by one step during construction, further opening up the throat under the overhang and improving the quality of the seats.

Evolution of the auditorium design at Glyndebourne

Following a limited competition to choose an architect for Glyndebourne when an auditorium template was given to all competitors to base their building design around, Theatre Projects Consultants was appointed. A different approach to the auditorium was discussed with the competition winners, Michael Hopkins and Partners, creating a circular plan form with parterre and 3 tiers stacked one above the other. The architects embraced this concept and took the circular forms further, to influence the form of the flytower and the office accommodation which enclosed the rear stage.

The plan form of the auditorium was adopted with a lyre-shaped parterre and four side boxes and one stepped proscenium box either side of the room.
The rake of the stalls was kept as shallow as possible whilst still achieving sightlines to the front of the forestage. The height of the stalls circle was determined by the front exits of the stalls. The rear exit to the stalls was taken down under the parterre to avoid any break in the balcony front and to offer the performers a visually continuous body of audience in the centre of the room.

As the design development proceeded, the desire on the architects' part to line up the eaves of the auditorium roof with the eaves of the adjacent house, together with a value engineering request to build one fewer balconies, led to a new disposition of people in the auditorium.
The side walls, initially expressed as low boxes, became more openly-spaced between horizontal balcony fronts.The first tier was, in effect, raised and the top tier, in effect, lowered, thus the second row of the first tier required greater vertical separation to improve the sightline over a higher (in space) balcony front.
The first circle was deepened by one row and the populations of the top two tiers were combined together on a seven row deep top tier.

The early concept of shallow tiers implied a simple structural solution. Once the top tier was increased in depth and the architect wished to express the drumlike form of the auditorium externally and internally, a new structural solution had to be found which required columns within the auditorium behind the fourth row of seats..
These columns could be well integrated into the seating layouts at lower levels. At the highest level, they announced a change in internal roof angle and with the help of a horizontal rail behind the fourth row, expressed the difference between the front top tier and the rear seats. There are many historical precedents for this resolution of the ceiling and its vertical supports.

The circular aspect of the design was manifest structurally as radial beams at the junction of the auditorium and the flytower, with props to the flytower structure. The radial layout of the structure at the sides then determined the width and depth of the side boxes as they approached the proscenium.
At the same time the side balconies became extended horizontally into the proscenium zone, rather than stepping downwards at the line of the orchestra rail.

The profile of the balcony fronts at each tier level modified to respond to sightline and acoustic requirements, creating a continuously changing profile at the upper two levels. The timber panel in one particular bay changed in every direction across its length -sculpture rather than joinery. The visual palette of materials in the auditorium was enhanced by the open slatted surfaces requested by the acoustician.

The architectural decision to express and visually emphasise the perimeter of the auditorium and at high level to span the roof across the whole drum, opened up parts of the auditorium at high level that could be used for standing places. They could be sited high enough to offer an excellent sightline to the stage which are the best value places for money (£10 main season; £3 touring season).

Wheelchair positions are easily accommodated in the parterre end boxes furthest from stage, where the surtitles can easily be read from a wheelchair, sightlines are good, and companion(s) can occupy the remainder of the box. Once these 6 places have been sold, a further 6 can be created by removing seats at the sides of the 4th and 5th rows of the parterre, again with excellent sightlines to the surtitles and stage.

Sightline criteria

The brief at the beginning of the project was to provide 1150 good seats.
To define a good seat, sightline criteria were set by Theatre Projects and John Bury and only those seats which met all 6 were included in the seat count.
The choice of radial entrances into the auditorium created unoccupied areas beyond the ends of rows which had been determined by the sightline criteria. During the construction process, additional seats were inserted in these areas by the client which were considered to have minimal restriction to the stage although they did not meet the original sightline criteria. These were never included in the original seat count and their ticket notes the restriction. In fact the total places for the room now stands at 1336.

Seat Pricing

The seat pricing of the new house at Glyndebourne with 6 prices of seats is more complex and reflects the shape of the room than the smaller front end-on house which had 3 ticket prices. A degree of audience education has been required to enable the long established audience to appreciate that seats less than the top price can have a very full view of the stage and well balanced acoustics.

The audience at Glyndebourne has traditionally purchased the high priced seats first (unlike the Royal Opera House where the seats in the top balcony sell out first). As the seasons progress, the audience will become discerning in which seats can provide the type of opera experience that they, in particular, are looking for. Some adjustment in ticket prices has already been made after the first season, in recognition of the high quality of the upper level seats.

Development of seat design

Not only are there many seat prices in an auditorium as complex as Glyndebourne, but also the ergonomic requirements of the seats vary greatly around the room. An early strategic decision for efficient air handling supply from under the seats meant that each seat (other than loose seats) had an air supply pedestal feeding from a plenum beneath.
Theatre Projects recommended 14 different seat types in the room, varying the back angle and height, the seat width, depth and height, whether they are fixed or loose or demountable etc. Each one of these types had to be detailed to give a consistent mechanical and acoustic performance with the air pedestal.

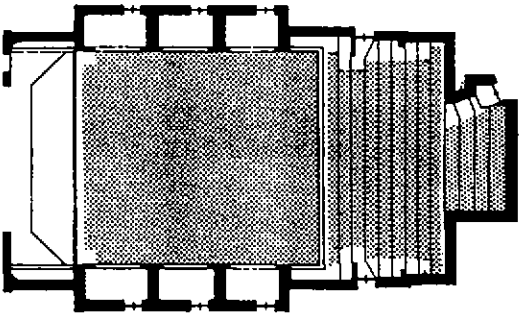
A simple seat model was chosen and developed by the architect and design team to achieve the selected materials, open area and absorption required for acoustics with the ergonomic

considerations. Seat and balcony front mock-ups were assembled for testing by the client and all aspects of comfort, kneeroom, passing room were checked.

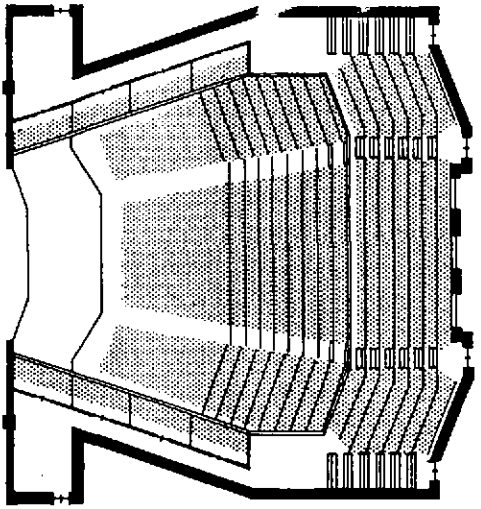
Conclusion

The ritual of going to Glyndebourne has remained intact, inspite of 50% more people per performance spilling out onto the lawns during the long interval, and the audience responds positively to promenading on the open terraces before the performance. The dress code is hardly broken and then only by the very brave, while a whole new audience has been able to obtain tickets for the first time and enjoy the ambitious productions at firsthand.
The external circulation of the foyers ensures that all the audience combine on entering and leaving the auditorium and the single bar acts as a focus to meet and find people.Those with seats at the top of the building are rewarded in their climb by views of the countryside.

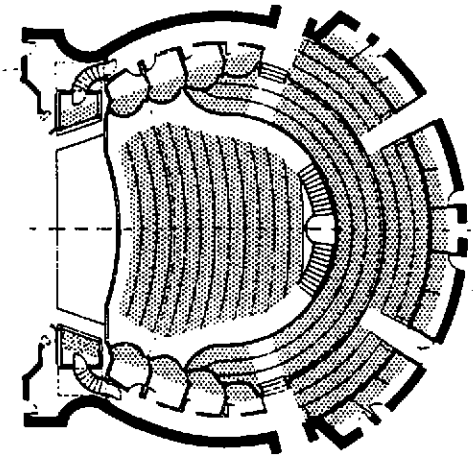
The form of opera house at Glyndebourne follows well-established historical precedents which the architects have reinterpreted in a 20th century idiom. Using reclaimed timber throughout, a spirit of 'lived in-ness' and a link with the past has been introduced into the new auditorium.
The concept of the audience embracing the stage performers and the vertical stacking of the audience to minimise the distances from the stage have been pursued in detail throughout the design and construction process to effect an intimate room.
Live performance has to compete with well-recorded versions of the same events today. "Being there" has to be a greater experience than watching a video, and feeling close to the performer, being in the same space and sharing the experience with others is an essential part of that.



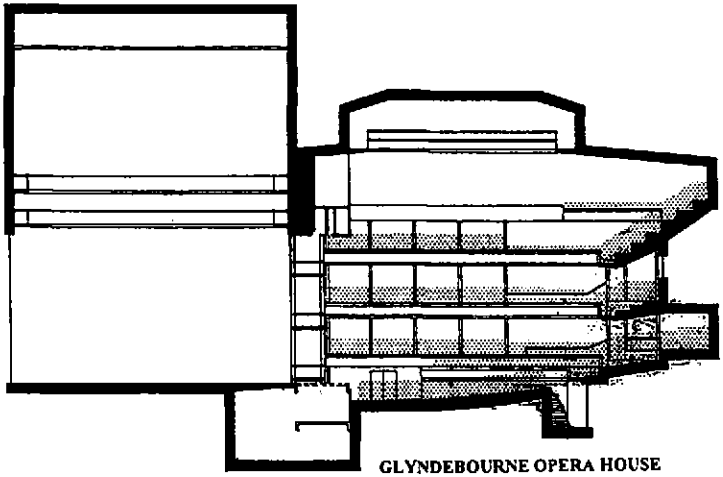
GLYNDEBOURNE OPERA HOUSE
1934 -1992 THEATRE



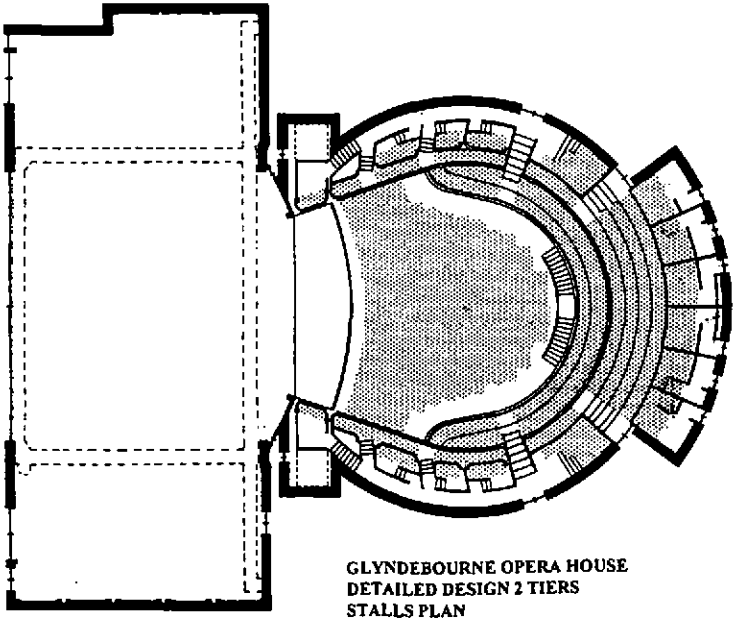
GLYNDEBOURNE OPERA HOUSE
COMPETITION SKETCH
BY JOHN BURY



GLYNDEBOURNE OPERA HOUSE
CONCEPT DESIGN
STALLS PLAN



GLYNDEBOURNE OPERA HOUSE
DETAILED DESIGN 2 TIERS
SECTION



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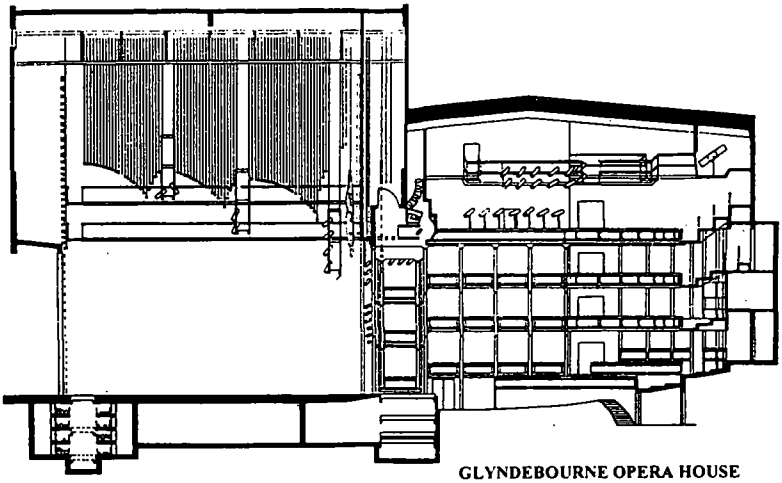
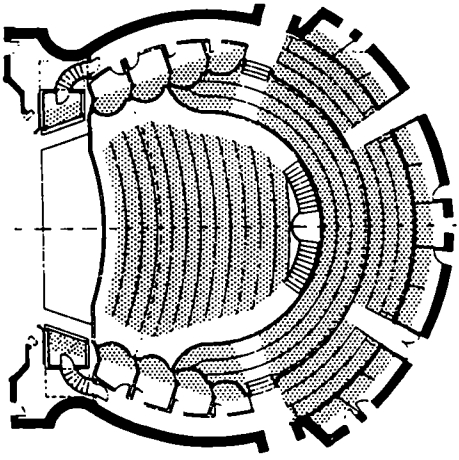
DETAILED DESIGN 2 TIERS
STALLS PLAN



GLYNDEBOURNE OPERA HOUSE
CONCEPT DESIGN 3TIERS
SECTION



GLYNDEBOURNE OPERA HOUSE
CONCEPT DESIGN 3TIERS
STALLS PLAN