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Output 2 (Design)

SARAJEVO HALL

Martin, Andrei + Yau, Andrew (2004)

Sarajevo Concert Hall project, Bosnia and Herzegovina

General Description:

This dramatic design by Urban Future Organisation (UFO) – winner of a major international competition in 1999 – has been very substantially reshaped and improved since by UFO to prepare it for construction. As a scheme, it extends the public surface of Sarajevo into and under the ground, forming a continuous free-flowing space for the foyers, auditorium and service areas, as well as creating an outdoor landscape above which bleeds into the surrounding park. The open landscape allows an unobstructed flow of people across and within the site, creating a new public square. The underground planning eliminates the impact between the concert hall and adjacent buildings, as well as the need for external facades. The ground acts as a thermal mass which increases energy efficiency; solar gain is thereby minimised, and overall the building environment is stable and controlled. Acoustically, an underground concert hall needs no sound reductive external envelope since earth possesses such good inherent acoustic properties.

Urban Future Organization is an internationally networked architectural practice which is actively involved in advanced digital design and fabrication. Thus in terms of its design, the Sarajevo Concert Hall needs to be understood as part of a line of projects currently being carried out by UFO and by like-minded designers – such as UN Studio, Foreign Office Architects or Plasma Studio – which use free-form, fluid and linear architectural forms. This aim is being pushed forward by the search for new methods of digital design and manufacturing in architecture. UFO is also known for being a relatively loose collaborative practice that operates as a network in many countries across Europe, with both Martin and Yau deeply involved in all these fascinating initiatives. Indeed, Yau is one of the three founder members of UFO, which was first set up in 1996, while Martin joined the practice around five years ago.

Research Questions:

The primary research issues in the Sarajevo Concert Hall include:

- (1) How to develop to develop a major concert hall design which would be able to meet the strictest energy performance standards.
- (2) How to achieve advanced acoustic performance in what is intended to be a leading international venue of its time.
- (3) How to utilise the latest digital design innovations in order to create highly advanced technological building within a globalised setting.

Thus the core of the research work behind the Sarajevo Concert Hall lies in how to create a fluid, open architectural form that can more easily adapt to organisational changes, and also make best advantage of current advances in computer-aided-design and global communication systems. Its underground nature also provides trigger for a sensitive and sustainable approach to urban design in a historic city like Sarajevo.

Aims/Objectives:

(1) To pursue the idea of a fluid and flexible spatial design in architecture, so as to conceive a new model for a sustainable major public arts building.

Here again the idea behind the Sarajevo Concert Hall is that of creating what UFO calls a 'negotiable' spatial structure, with three free-flowing ramps drawing people from the entra plaza above and then meeting up together at the sunken main auditorium. This open flexibility and adaptiveness in the design program, seen essentially as a series of fluid 'event spaces', is intended to suit the changing nature of performance venues as an international phenomenon, given the ups-and-downs over time that all such venues experience. Indeed, it is always a constant aim of UFO to try to democratize the use of spaces in whichever building it designs - attempting thereby to find adaptive, non-hierarchical solutions that can give a sense of unity for the contemporary use, but likewise do not militate against the spaces being changed in program in future.

(2) To investigate a new standard of optimum acoustic performance, using the expertise of leading sound engineers from Arups.

Working closely with the Acoustics Design division in Arup Engineers, who are of course the world-leaders in the field, a number of innovations have been devised as part of the development of the Sarajevo project. First of all the building is sunk below ground to minimise sound ingress and leakage. Then, for the roof of the main auditorium, whose upper surface also forms part of the public space at ground level, a distinctively undulating coffered ceiling has been devised. This aim of this is both structural, in order to span a long distance without columns, but also to break up the reflection of sound waves within the performance space. In addition, a complex series of folded insulated panels, which look like giant origami exercises, were devised as a covering for the underside of the coffered auditorium roof. These along with special absorbent surfaces and profiles to the auditorium's perimeter walls, plus unique features around the stage to enhance sound transmission by the stage performers, creates an international-standard venue.

(3) In urbanistic terms, the Sarajevo Concert Hall sets itself a number of key objectives in terms of stitching together a neglected part of the inner-city district.

These aims include the creation of an urban park landscape in the heart of a city which not too long ago was riven by violence and fear; the provision of an active zone beside the concert hall for the use of the town's citizens; and the blurring of the boundaries of the new building to allow its fluid interior spaces also to serve the external activities, and as a result to blur the understanding of what the extent of the building is. The goal is thus to create an interior volume that allows for a park to exist above and for the most public spaces in the concert hall to have the most direct relationship to the outside.

(4) To utilise the open network and collaborative approach of the UFO practice to design a major building in Sarajevo, as part of establishing a globalised architectural practice.

Again, the loose network approach of UFO allows it, having won the original competition for the Sarajevo Concert Hall, to pursue the project through to detailed design stage and adapt it to the latest criteria. It continues the UFO policy of a highly democratic structure, a collaborative approach, and the ready exploitation of the digital network - such as the internet and advanced communication systems - to optimise the input of UFO's individual members and provide each of them with mutual support.

Context:

In its operations, the approach which is adopted by Urban Future Organisation can be seen as a rejection of the 'star system' and the overly visualised culture of current international architecture, preferring instead to seek a degree of anonymity and a closer attention to whichever design project is in hand. It thus forms part of the growing sub-culture within globalisation that is trying to work against the dominance of big corporations, which in the architectural sphere are now typified by mega-commercial practices like Foster & Partners or Skidmore Owings & Merrill. Again, in cultural terms, the design ideas of UFO seek to explore Deleuzian concepts as applied to architecture, primarily through a preference for smooth flowing spaces and folded structures, and an accompanying interest in the physics of complexity and current ecological paradigms.

As well as these more generalised design intentions, the scheme for the Sarajevo Concert Hall clearly carries some profound cultural implications. It represents above all the desire to rebuild the country and the hopes of its citizens after the horrors of Balkan wars, which while now almost two decades ago, are still very fresh in the minds of people who live there. The symbolic importance of the concert hall is self-evident, and it has been the role of Urban Future Organization to work closely with the promoters of the hall in Bosnia and Herzegovina to refine and update the scheme, and ready it for construction. Indeed a major amount of time has been spent by UFO in helping prepare design material so that enough sponsors can be found for the Sarajevo Concert Hall.

Research Methods:

As well as visiting the Sarajevo site several times, and having already produced an initial proposal to win the competition, UFO has in recent years begun to test out in a more systematic way the various programmatic solutions and layout permutations for the building. As in all their projects, the use of advanced and extensive 3D physical modelling and visualisations using Studio Max, Rhino and Maya, and their testing out against local conditions, formed the core of their research and design approaches.

Their wider goal, as noted, is to achieve the 'creative efficiency' demanded by cutting-edge architectural practices. In this way, the philosophy of intensive collectivity and group collaboration extends itself into UFO's research methods; in the same way as a wiki network, the multinational members of the practice help each other out with design solutions, and can also bring in experienced consultants like the acoustic specialists for the Sarajevo Concert Hall, helping thus to facilitate future developments in architectural production and urban development. In this way, the very nature of UFO seeks to provide sensitive design responses to both context and use, in that it consciously pursues an international agenda in its projects, yet by its dispersed organisation it also maintains the specific qualities of local diversity.

In the case of the Sarajevo Concert Hall, this involved UFO in a very detailed study of the central area of the city and its vehicular / pedestrian movements. This research was used to conceive the sunken concert hall as a kind of magnet which draws people to the open space above, generating activity and movement. Architecture is thereby reduced to the reorganization of the existing urban landscape, as a structure which can orchestrate the performances of everyday urban life. Likewise, exacting spatial research was carried out into the complex three-dimensional ramps which are to draw people from the park level down into the actual auditorium space, as a conceptual whirlpool occasioned by art.

Dissemination:

The Sarajevo Concert Hall has been written about many times over the years, and its various phases have been excellently described in:

- Francesco Ghio & Donata Tchou. *Sarajevo Concert Hall Design Competition*. Florence: Alinea Editrice, 2000.
- Kester Rattenbury. 'Return to Sarajevo', *World Architecture*, May 2002, pp. 22-4.

The Sarajevo project, although it still remains on paper, has also been widely exhibited, along with other UFO projects, in such important events as the 2004 Venice Biennale and 2006 Beijing Biennale, as well as in books and the architectural press. Indeed the work of Urban Future Organization has been published quite extensively on the international scene, including in journals such as *Ottagono* (Italy), *Concept* (Taiwan), *Contemporary Architecture* (Japan), *World Architecture*, as well as the *Architects' Journal* and *Building Design* in Britain. Perhaps the most useful commentaries on UFO's output in general are contained in the following sources:

- Forster, Kurt. *Metamorph: 9th International Venice Architectural Exhibition, Projects*. New York: Rizzoli, 2004, p. 70.
- Hadid, Zaha et al (eds.). *10 x 10_2: 100 Architects, 10 Critics*. London: Phaidon, 2005, pp. 380-3.
- Long, Kieran. 'Digital Generation', *Building Design*, 7 March 2003, pp. 12-15.
- Puglisi, Luigi Prestinenza. *Tre Parole per il prossimo futuro*. Milan: Babel, 2002, pp. 20-1.
- Thijssen, Wouter. 'Negotiable, adaptive and non-hierarchical: The future according to Urban Future Organization', *Archis (Open Source)*, no.3, July 2003, unpaginated.

As key members of Urban Future Organization, Andrei Martin and Andrew Yau often get asked to talk about their work in architectural schools in Britain and abroad, and indeed they have been asked to run a number of workshops and seminars on digital design. These include those at the Architectural Association, University College London, London Metropolitan University, Royal College of Art - and, further afield, in places like Korea (July 2007) and in New York (November 2007).

Esteem Indicators:

The best evidence of esteem for the Sarajevo Concert Hall is that it won the major international competition back in 1999, although the scheme has since been extensively re-worked and updated. Given that the project is still seeking funds to be constructed, and in lieu of that, a number of recent factors can be cited to indicate that UFO are indeed now engaging on an internationally acclaimed level. These include:

- Runners-up in *Building Design* Young Architect of the Year Award (2003)
- Won major international competition for Linguaglossa leisure resort, Amalfi (2003)
- Exhibited at 2004 Venice Biennale and 2006 Beijing Architectural Biennale
- Specially selected by Zaha Hadid for inclusion in *10 x 10_2* (2005), this being a survey of the world's most promising architectural practices
- Part of team that was awarded the HOLCIM Foundation's European Gold Prize (2005) + Global Silver Prize for Sustainability (2006)
- Specially invited to run a digital workshop at the Korean National University of Art, Seoul (July 2007)

APPENDIX A

Description of the Sarajevo Concert Hall project

Urban Future Organization

[Revised, June 2004]

The project extends the public surface of the city of Sarajevo into and under the ground, forming a continuous space wrapping the foyers, the auditoriums and the service areas as well as an outdoor landscape above which bleeds into the surrounding parks. The surrounding surface of the parkscape dissolves into and continues underground in a whirl-pool movement allowing access from several critical viewpoints. The bifurcated landscaping creates openings for entrances and natural lighting. The surface also expands and contracts on its way down, accommodating different events through the building. The landscape above allows public facilities within the building to blend with outdoor space and its events. The relationship between exterior and interior events changes according to the time of the day, weather conditions and season. The open landscape allows an unobstructed flow of people across and within the site creating a public square for the city.

The planning of the building underground eliminates the mutual impact between the concert hall and adjacent buildings as well as the necessity of external facades. The ground acts as thermal mass which increases the energy efficiency. The solar gain is minimised and overall the building environment is stable and controlled. Acoustically an underground concert hall needs no requirement for sound reductive external envelope since ground has very good acoustic properties.

The project of the Sarajevo Concert hall has the following objectives:

- creation of a urban landscape in the heart of the city
- provision of an active zone for the use of the citizens of the town
- blurring of the boundaries of the building to provide for the interior of the city to serve the external activities and to blur the understanding of the building's extent

These objectives were to be achieved by creating an external surface of the proposed park that focuses the flows towards the site and creates the interior volumes by flowing into the inside of the building as three ramps, which move into the interior of the building and congregate together in the main concert hall. This succeeded to create an interior that allows for the park to exist above and for the most public spaces to have the most direct relationship to the outside.

The project

The city of Sarajevo has a unique setting in the landscape of Bosnia and Herzegovina. The city is organised along the valley of the river Mljecka, with the mountains to both the south and the north of the city. The site in Marinić Dvor lies between the old part of the city at the east, and the new town, to the west. The old town with its low developments from the Austrian period allows views through the streets and squares to the exterior of the city, and the new town contrasts the landscape with its predominantly vertical elements. The horizontality and the topography addresses this relationship by allowing focused views through the site to maintain these connections.

There are a number of critical connections between the city and the site that are to be addressed. The proposed business park creates a central park, that links the site to the old town, the diagonal running through the site links the existing railway station to the south bank of the river, and the direct connection to the parliament building and the central square. These critical routes meet and pass through the point of the site and concentrate the public densities in this central entrance area.

The external landscape is understood as an area of pedestrian priority zone, with direct links to the infrastructure of the city. The site will have a direct relationship to its public entrances positioned in relationship to the city, will have direct coach drop-off points, taxi and VIP drop-off, access to public bus transport and artists and VIP entrance on the south side.

The servicing of the proposed building is from below – the two-level car parking is situated to the north of the site underneath the central square. From the proposed access route by the master plan, a loading bay is directly underneath to access the storage areas, delivery to bars and restaurant and for recording studio vehicles.

The outdoor foyer area can be used as a performance space during summer, the coffee bar and restaurant can spill out into the space and the artificial topography can be used as viewing mounds or amphitheatres. This direct relationship to the outside is emphasised with the views through from the interior through the entrances and the skylights that will introduce dramatic daylight into the interior. The most public spaces are concentrated in the topmost level – the foyers, ticket offices, cloakrooms, information kiosks together with the restaurant, café and bookshop.

From these three main spaces the spiral access to the intermediate level of library, bookshop and management offices begins. The three ramped access congregates in the main hall, which continues the ramped access in the arrangement of the seating. The level differences are negotiated in the slopes of the seating forming the visibility lines to the performance stage. In some areas the seating join to form a continuous ramped surface with joined access at certain points.

The hall, although having an overall asymmetrical layout, offers equal seat arrangement with appropriate focus on the stage. The hall has no balconies, which will mean there will be no sound pockets, and due to the circular arrangement the proximity of the seats to the stage. The ramped access to the hall also allows for the creation of side walls that will be reflecting the sound back to the orchestra and the auditorium. The concrete ceiling in the form of a triangulated coffer will diffract the sound around the hall and the reflector panels above the stage will concentrate the sound to the auditorium. The stage has a flexible arrangement where the orchestra can be either used with or without the choir seating, and the first tier of seats can be removed to create a larger performance stage.

The secondary auditorium can serve an arrangement of a quartet performance or serve for conferences or small stage performances. The arrangement proposal for seating can be made either as flat or sloped to meet the upper level ramp. The performance stage can be raised or lowered to adapt to the suitable performance arrangement.

The rehearsals spaces are wrapped around the hall on the south and east side. The main rehearsal space is to have a similar shape to the main stage allowing for the same configuration of the musicians as the main auditorium.

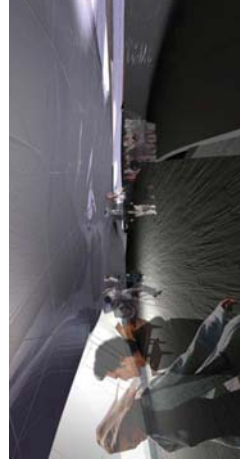
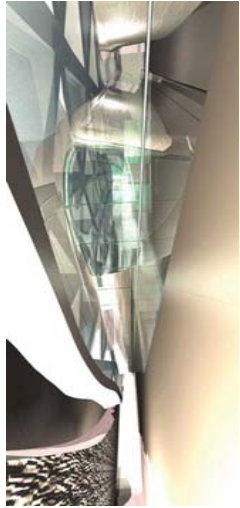
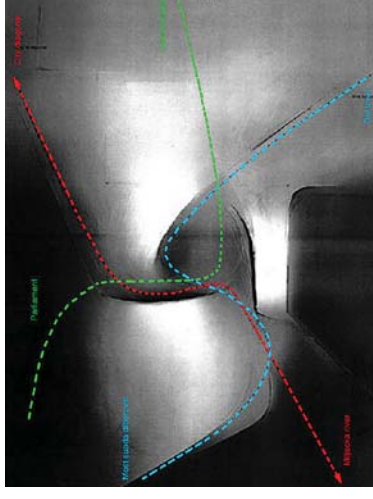
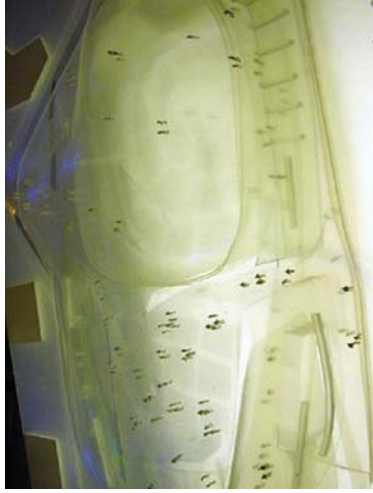
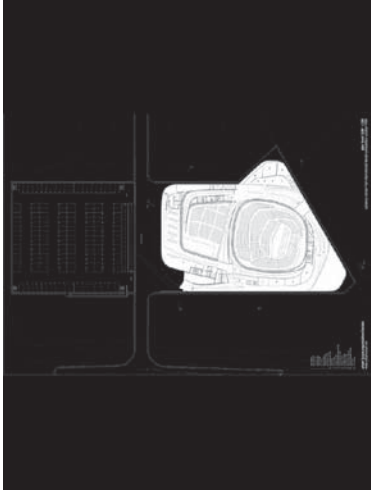
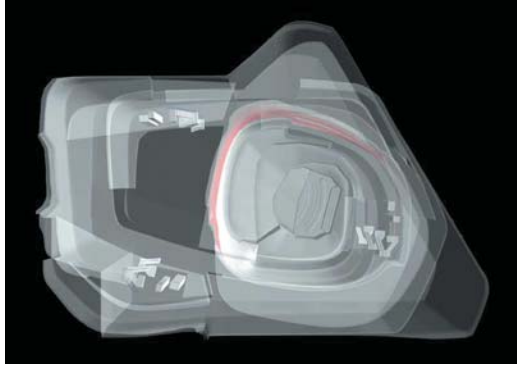
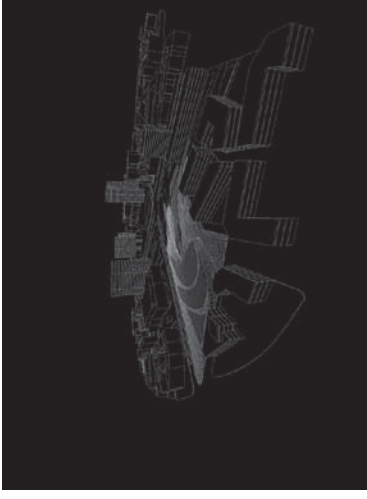


Image 1: UFO's original competition-winning scheme for the Sarajevo Concert Hall



Image 2: Key buildings in central Sarajevo

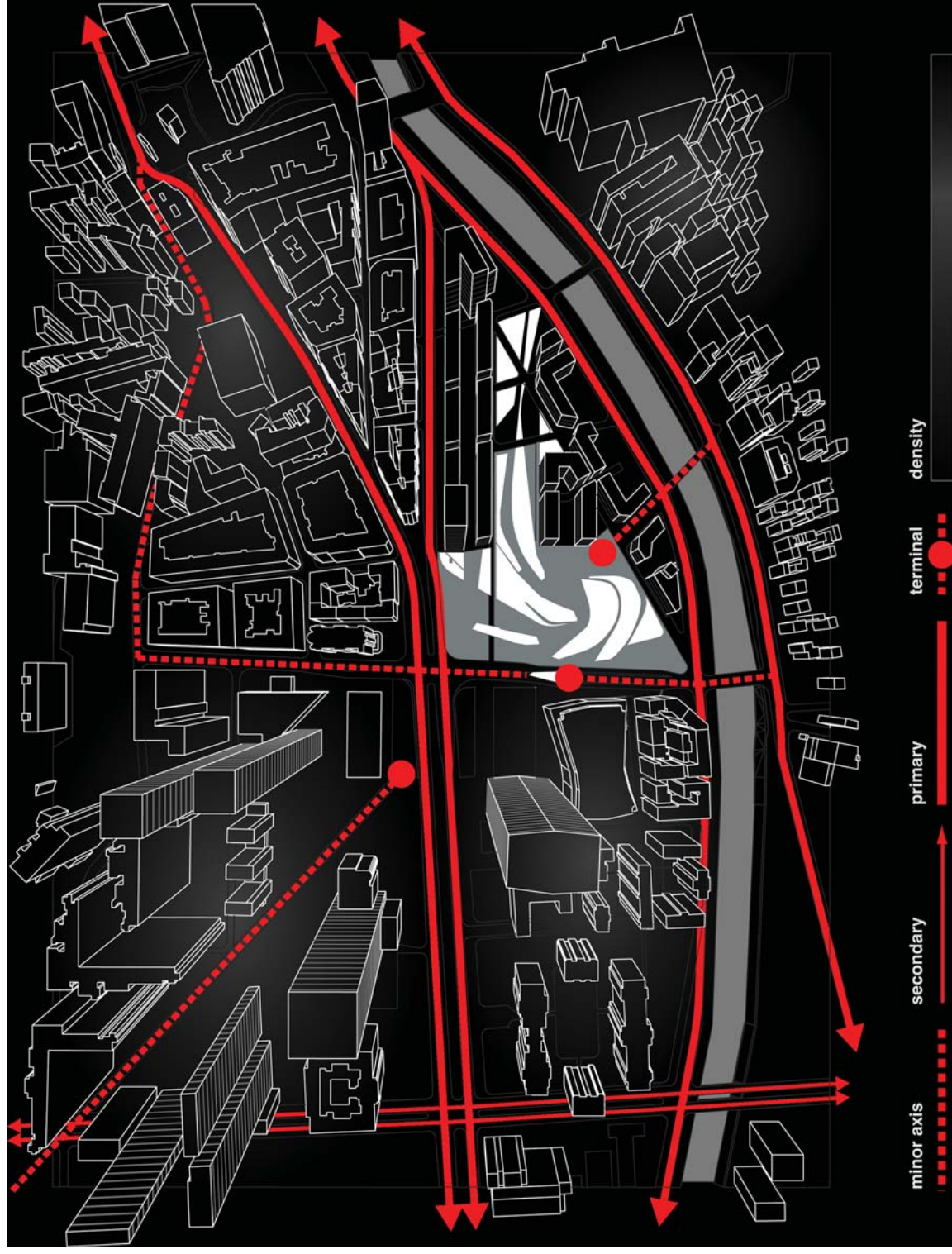


Image 3: Main transport routes
in central Sarajevo



Image 4: Pedestrian flows
in central Sarajevo

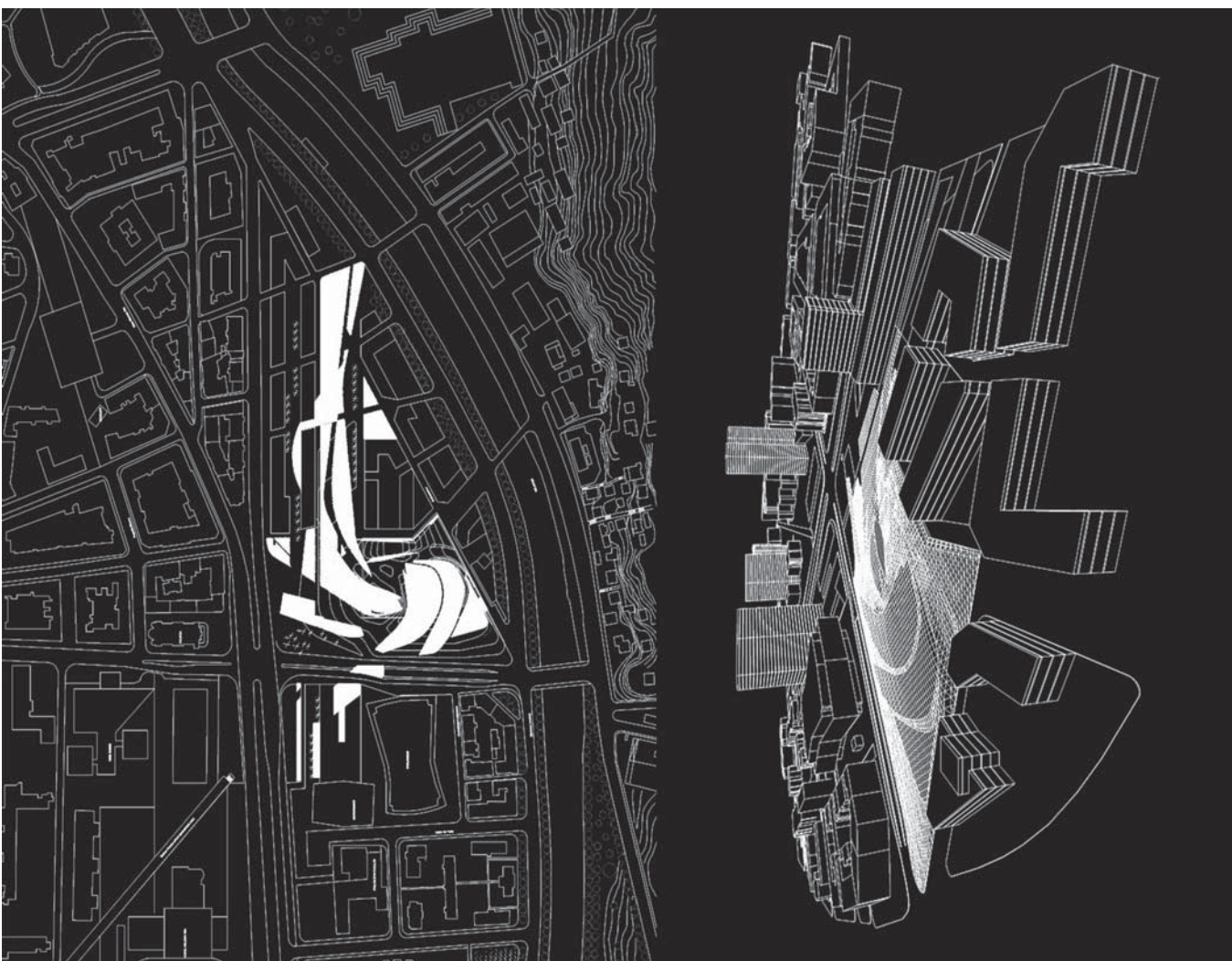


Image 5: Urban configuration of
the developed scheme

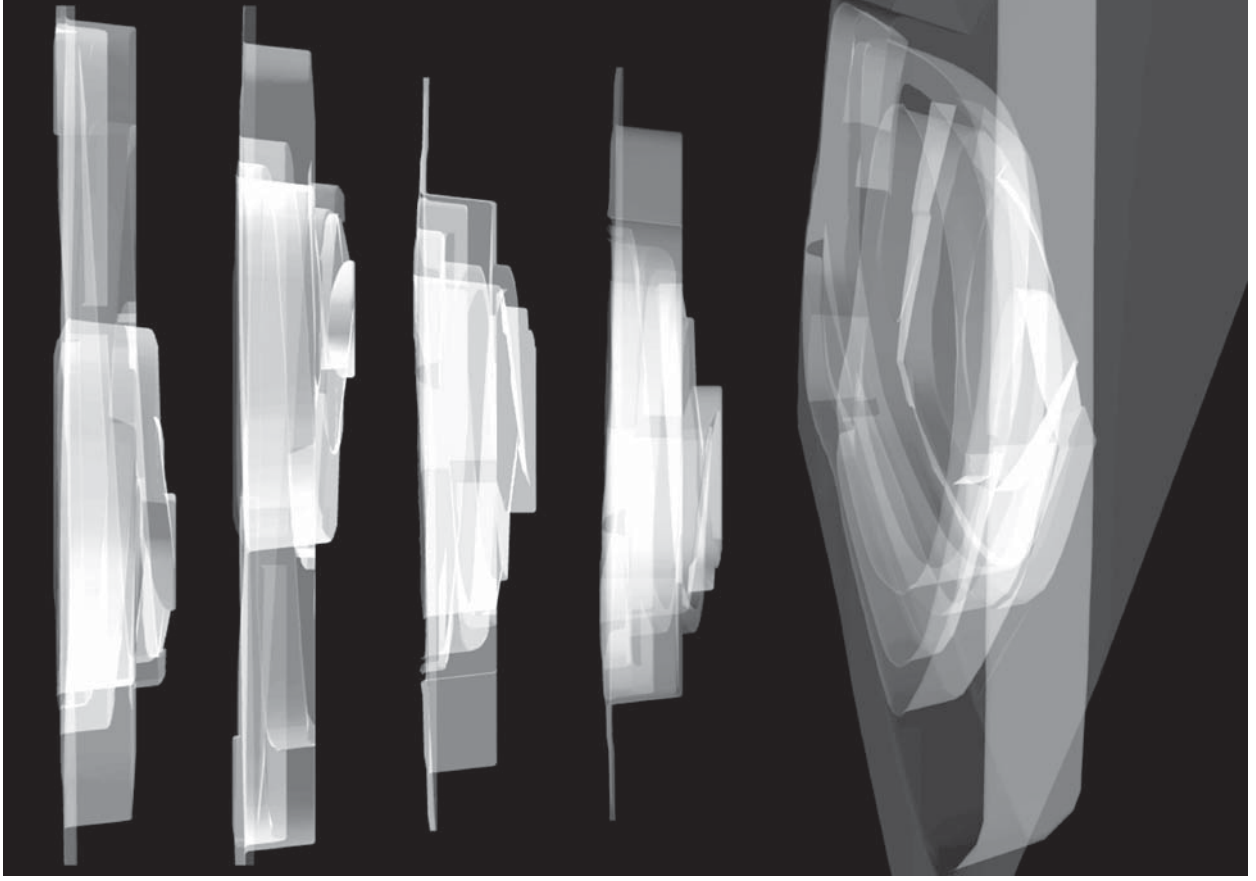


Image 6: Concept rendering of concert hall sunk into the ground beneath a plaza / park

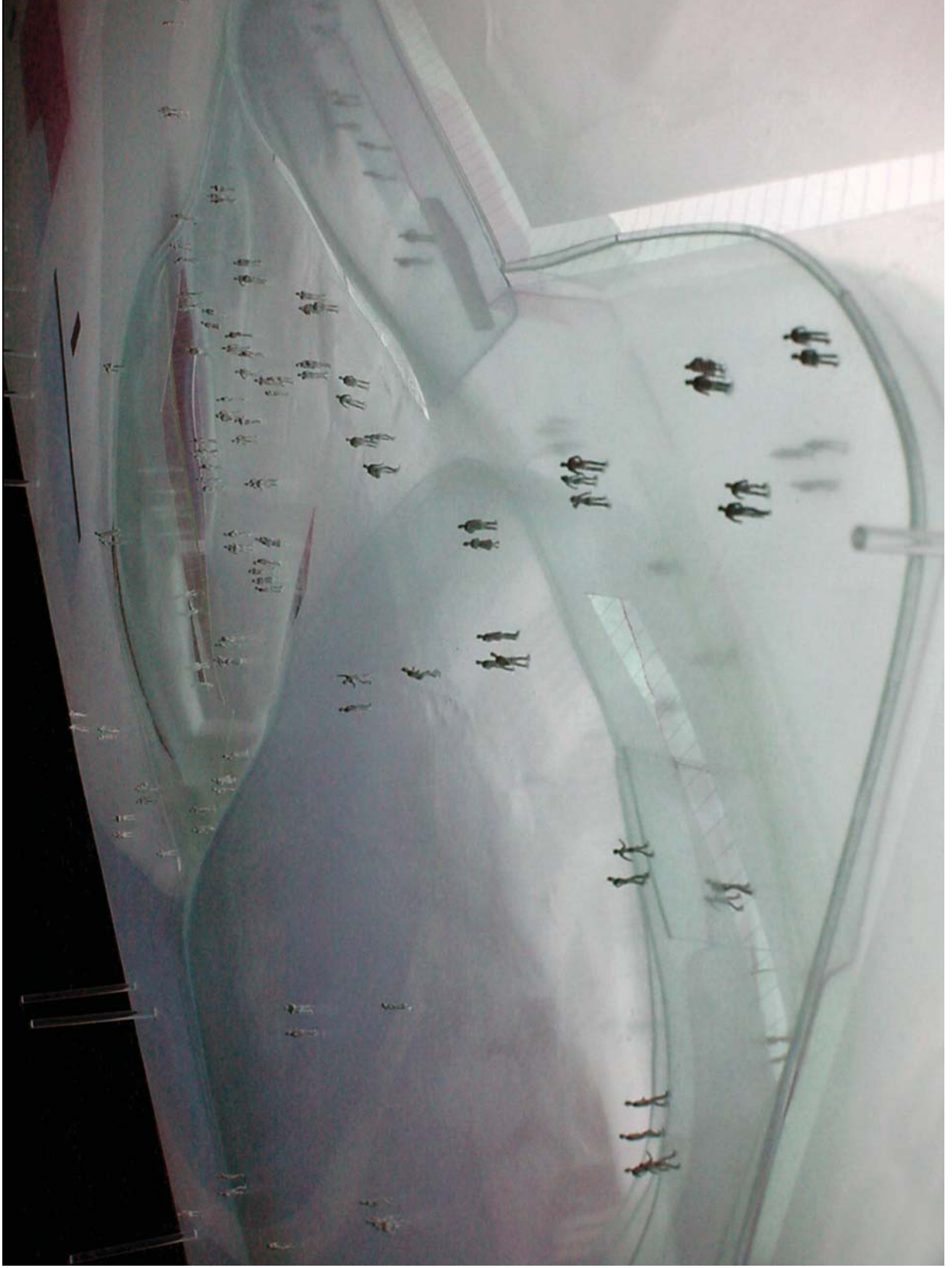


Image 7: Model photo
of plaza / park

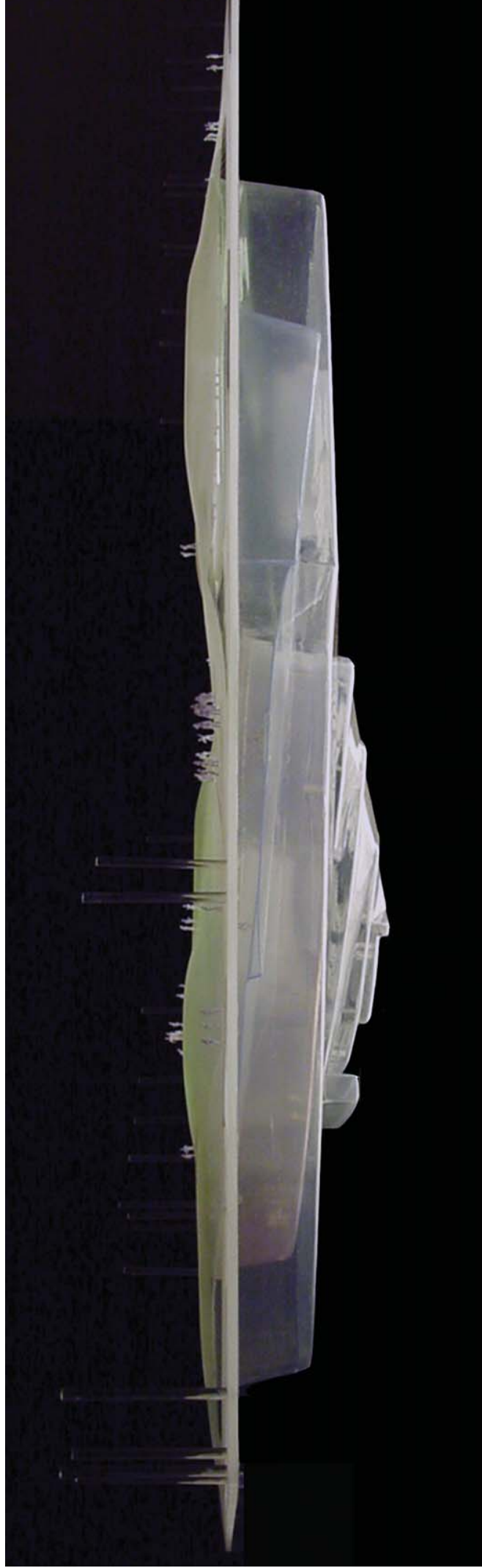


Image 8: Sectional model showing sunken auditorium

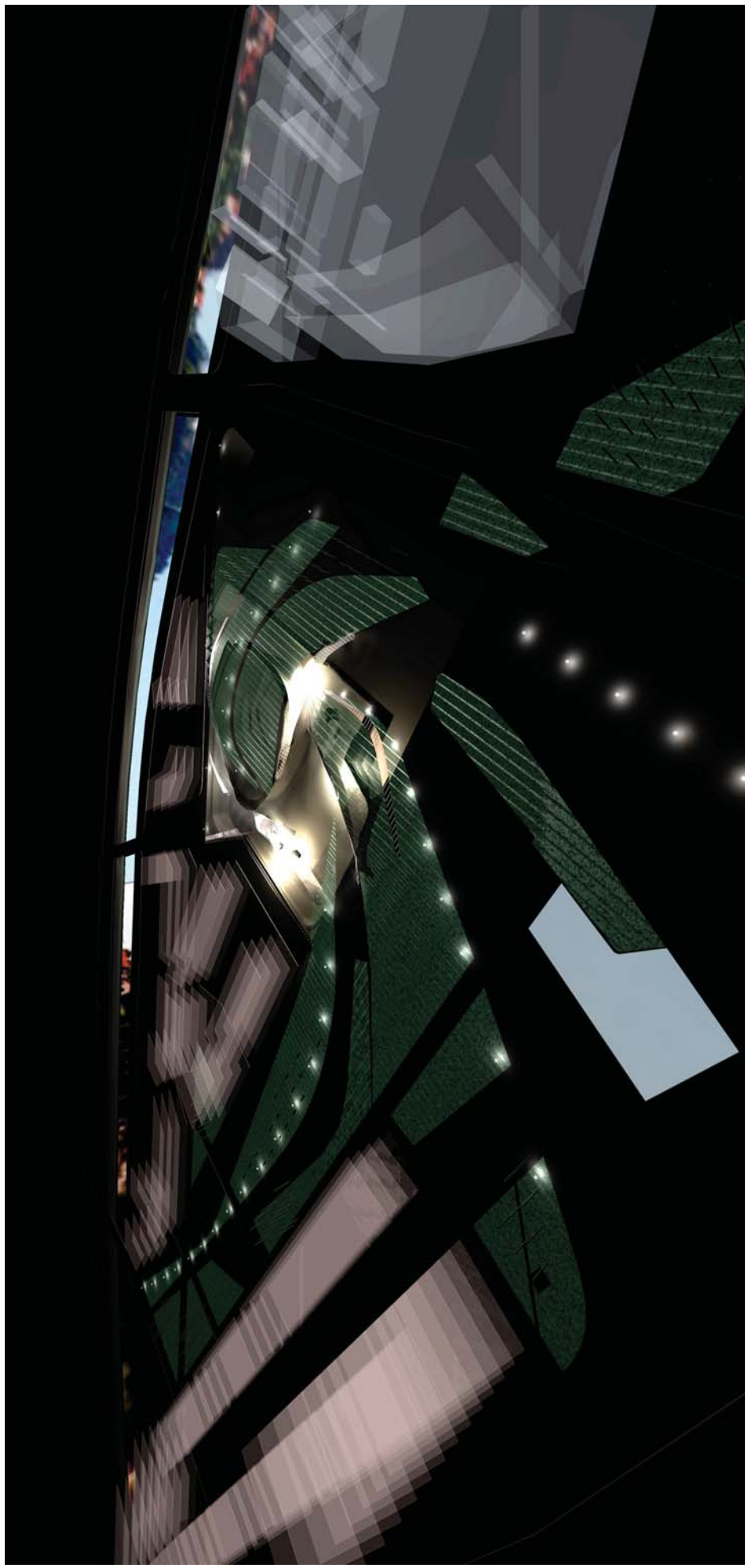


Image 9: Aerial view of the Sarajevo Concert Hall scheme



Image 10: Perspective rendering of the entry plaza

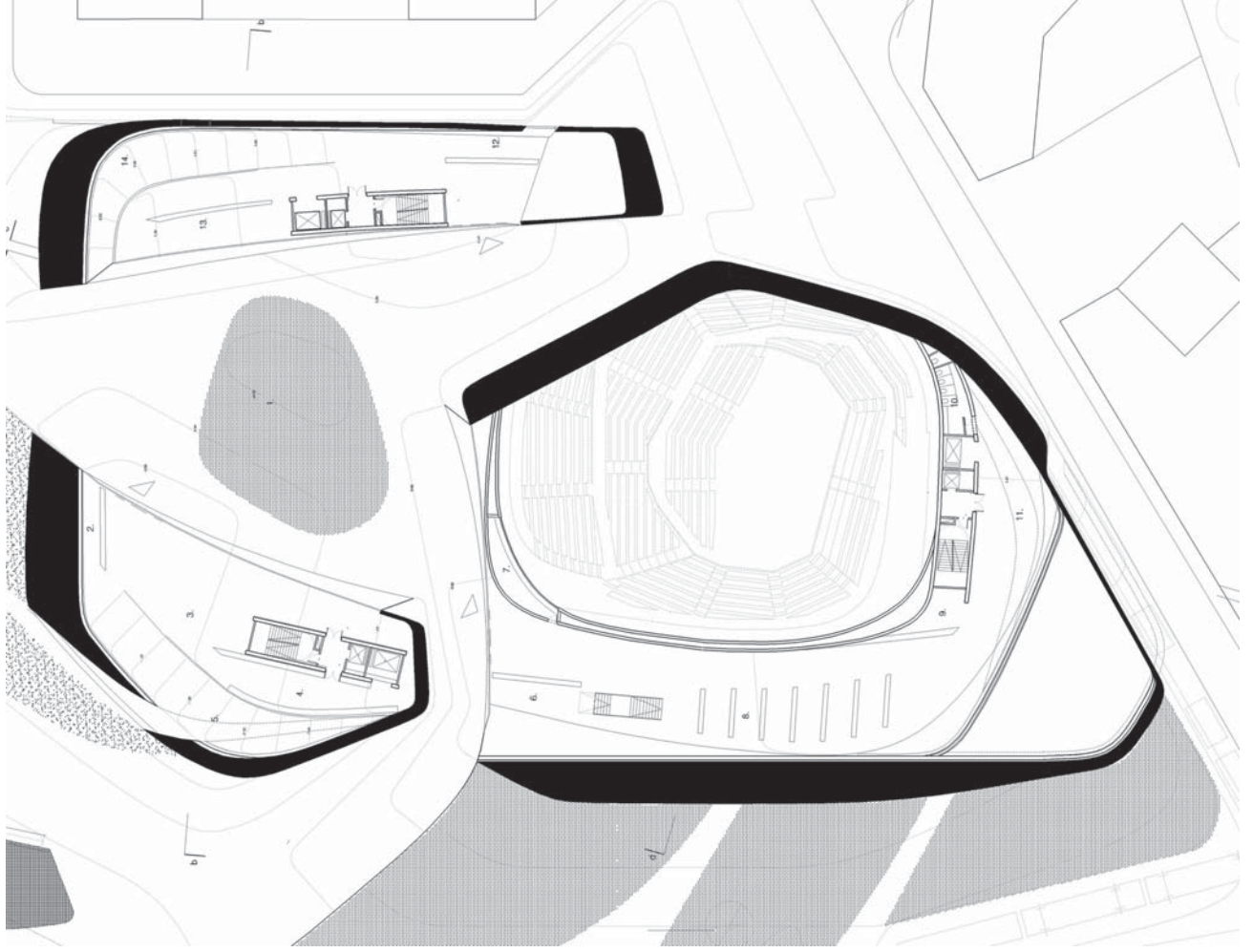


Image 11: Ground level plan

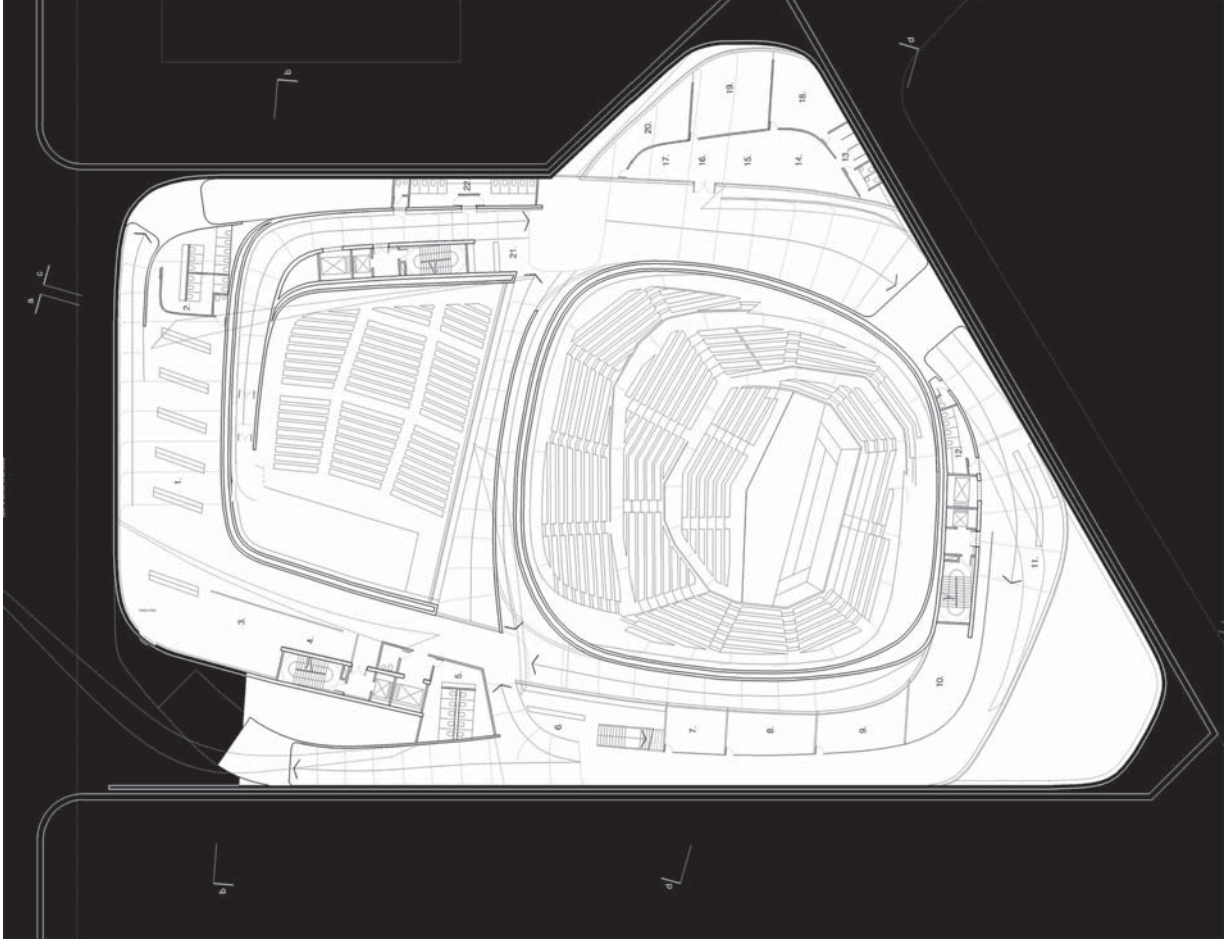


Image 12: Plan of first level below ground

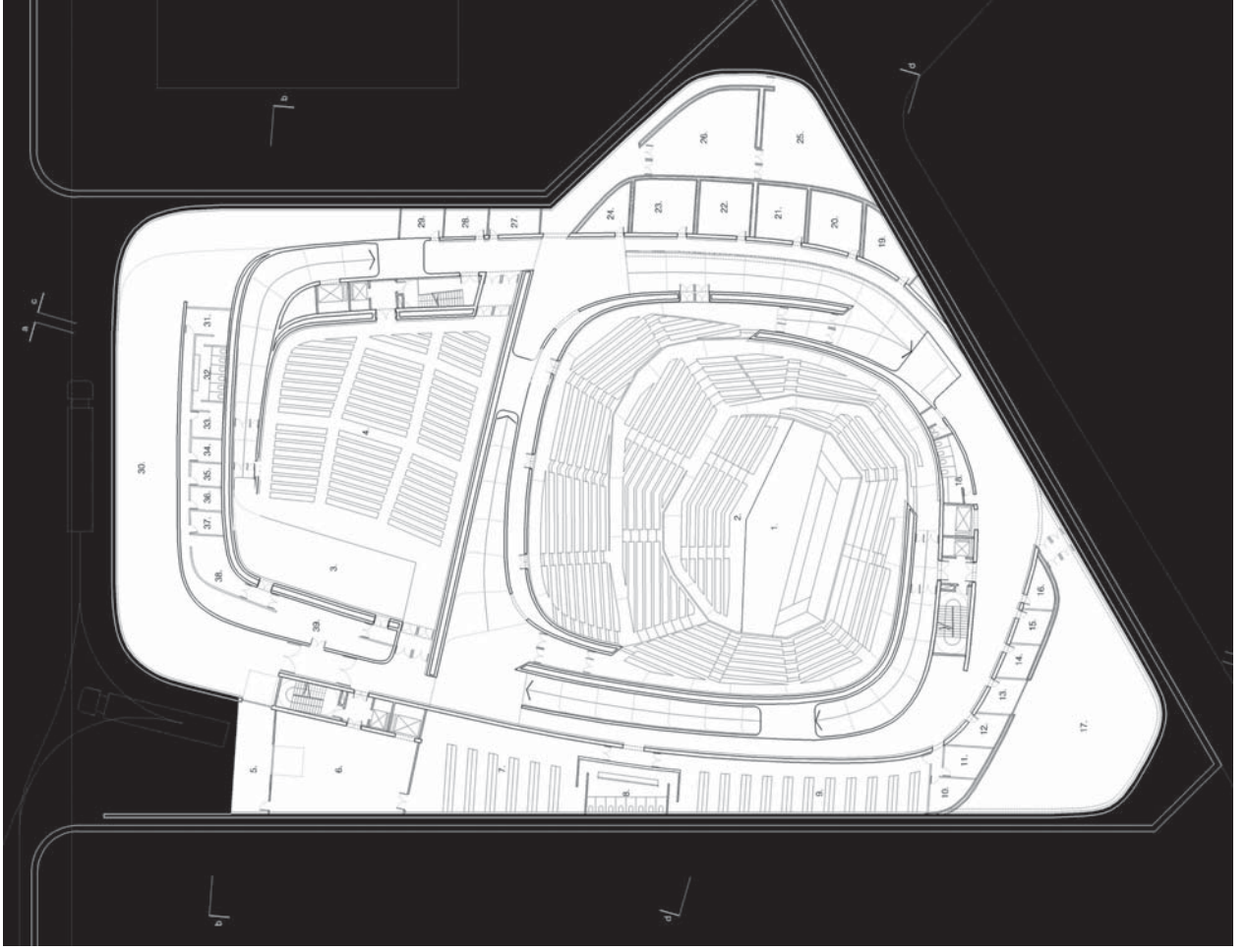


Image 13: Plan of second level below ground

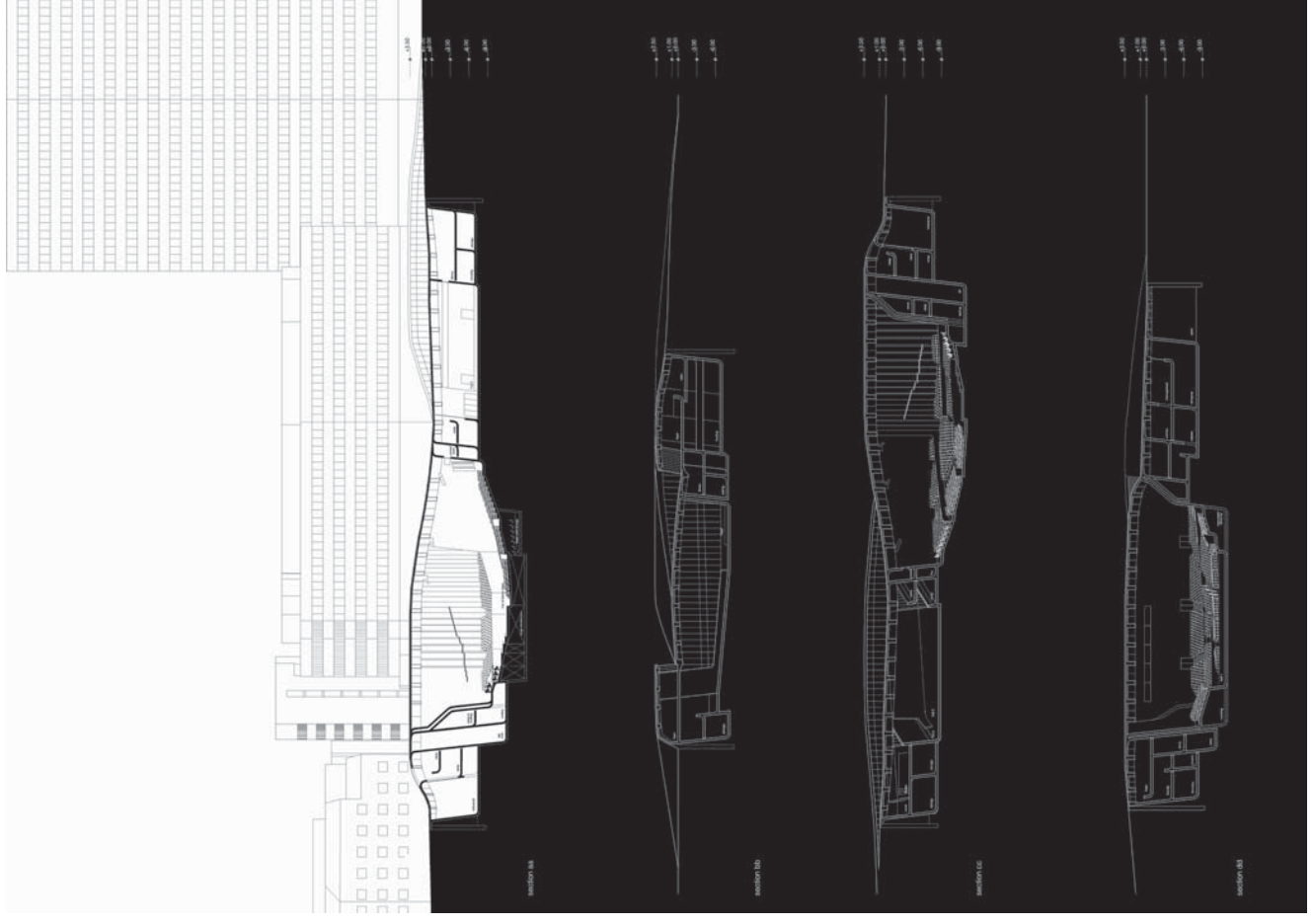


Image 14: Sections through the auditorium



Image 15: Perspective rendering of auditorium in the Sarajevo Concert Hall

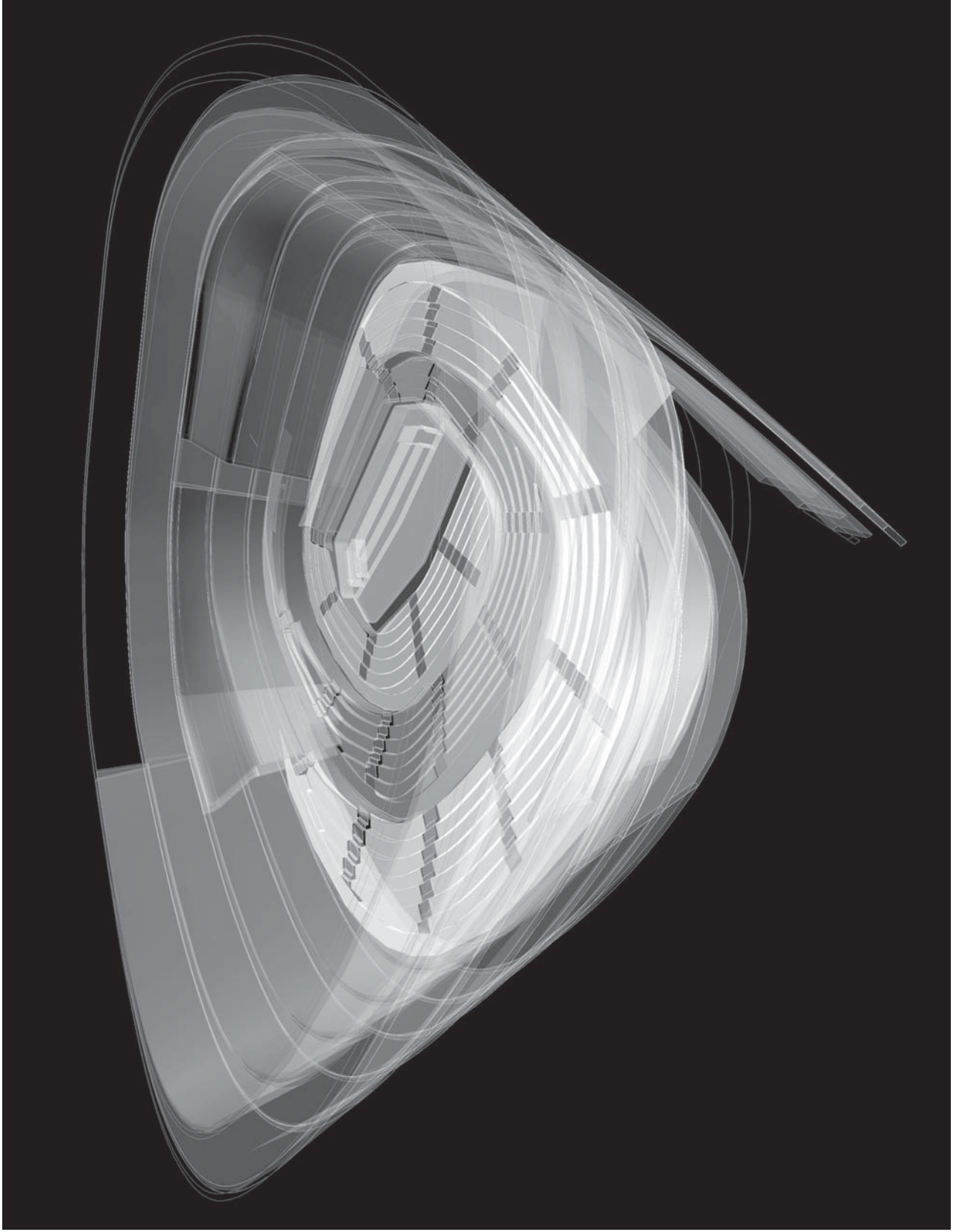


Image 16: Digital model of
auditorium for
acoustic analysis

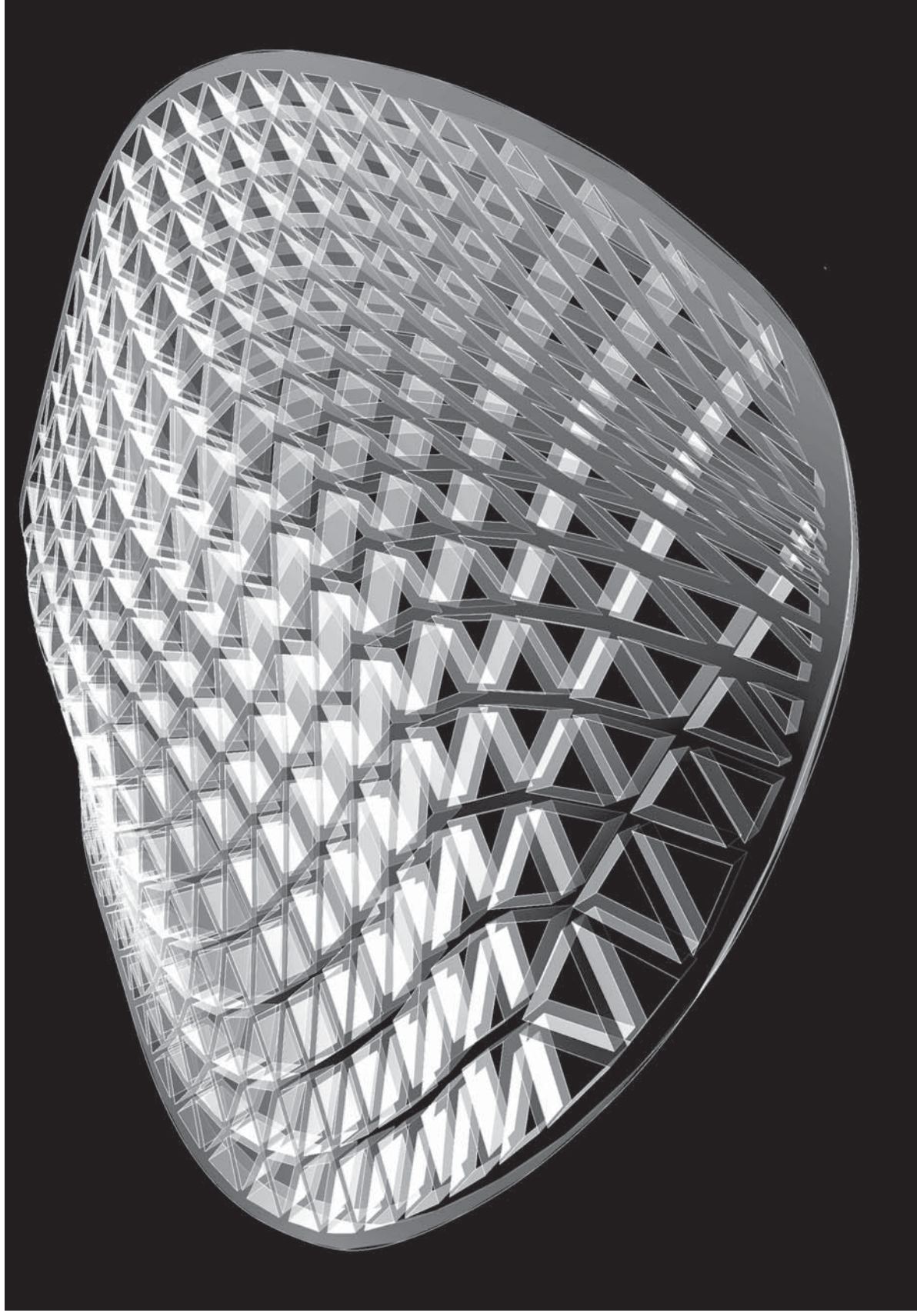


Image 17: Acoustic structure for auditorium roof designed with Arup Engineers

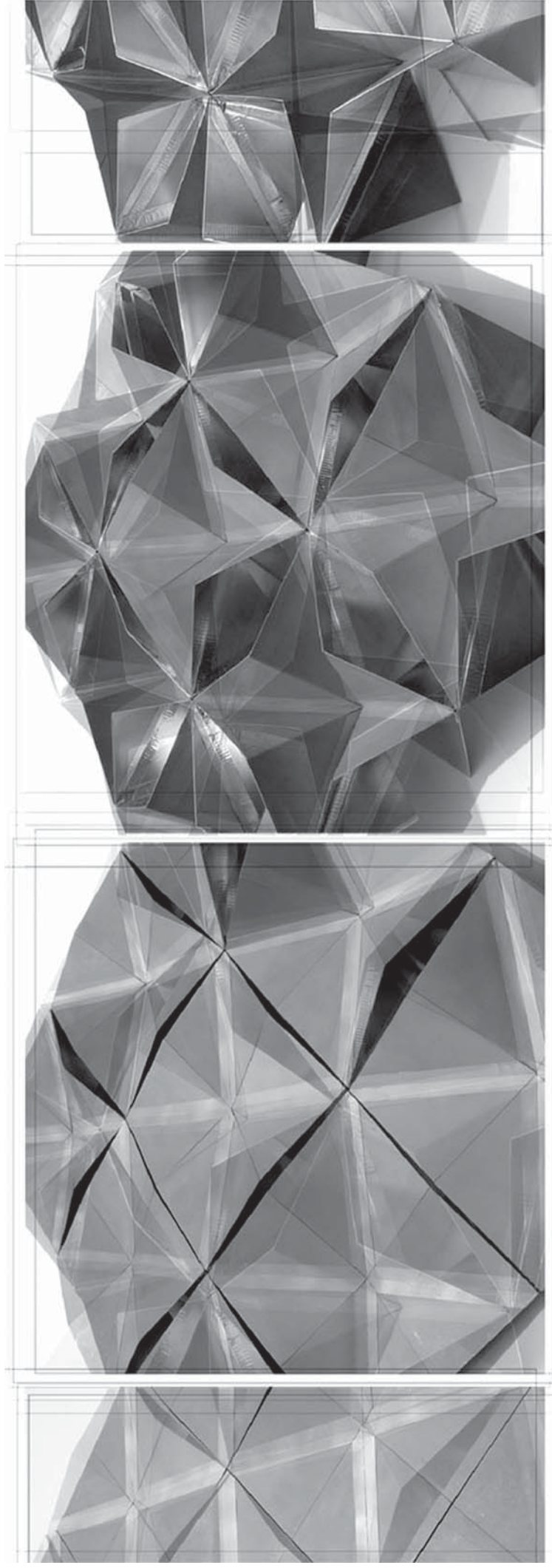


Image 18: Acoustically absorbent components to act as coverings for the auditorium roof, designed with Arup Engineers