



TURKIC DELIGHT

Words Herbert Wright
Photography Hufton + Crow and Iwan Baan

The Heydar Aliyev Center sits like a fantastic white alien object in the cityscape of Baku, capital of Azerbaijan. Along with its radical landscaping, the centre redefines its urban context. More than a national icon for the ex-Soviet republic, it may be the most free and dynamic expression of Zaha Hadid's vision of total fluidity yet built – inside and out. Its extraordinary form also owes something to forgotten masters of thin-shell structure design





PREVIOUS SPREAD IWAN BAAN ALL OTHER IMAGES HUFTON + CROW

Has ever anything so white, curvy and free been seen in Baku before, save perhaps sunlit clouds over the Caspian Sea? But this new shape atop a hillside in the Azerbaijani capital, lodged between social housing and a mini spaghetti junction of road loops, is not a cloud. The Heydar Aliyev Center is more like a vast white sheet that sweeps up from the ground into a strange composition of fissures, folds and rises, and then rolls in on itself along a great straight edge. Within this free-form surface is a complex of asymmetric white spaces where height and depth blur in the absence of straight lines. Glazed facades cut vertically, those at the front looking out over a cascade of terraces and water features. On this side, the building's white envelope plunges parabolically to touch the ground, a dramatic gesture that, with a towering peak at the rear, gives the building a shorthand signature.

The Heydar Aliyev Center, with an indoor area of 101,801 sq m, may look gloriously alien, but there is something familiar about it. The total fluidity inside and out, the way its malleable form bends and morphs, the tectonic topography that dissolves division between building and surroundings – of course, these are hallmarks of Zaha Hadid. ‘My ambition was always to create fluid space, on all levels,’ she reminded Blueprint (see page 68). In Baku as in contemporaneous projects, such as the Serpentine Sackler Gallery in London, the design is also informed by an exploration by her – and practice partner Patrik Schumacher –

of pre-digital masters with a very different history to the Russian Constructivists usually cited.

Local history too is relevant, at least contextually. The Russian Empire outpost of Baku became the world's first oil boomtown in the 1870s, and rapidly grew into an industrialised, overcrowded, polluted, but cosmopolitan, metropolis. From 1896, the Aliyev Center site hosted the Levinson factory, which made oil extraction machinery. After the country's independence in 1991, the engineering plant moved. There were plans for a grand mosque to replace it, but Azerbaijan decided that a forward-looking national icon would be better and held an international competition for a cultural centre in 2007.

Despite it containing a memorial museum to Azerbaijan's modern founder, the Aliyev Center is a symbol of new national aspirations – open, dynamic, forward-looking. Because of its role as the country's cultural hub, ZHA's project architect Saffet Kaya Bekiroglu says, ‘We had to understand the Azeri culture and their aesthetic palate.’ (Bekiroglu himself has the advantage of a Turkish Cypriot background, enabling him to understand the Azeris' Turkic language).

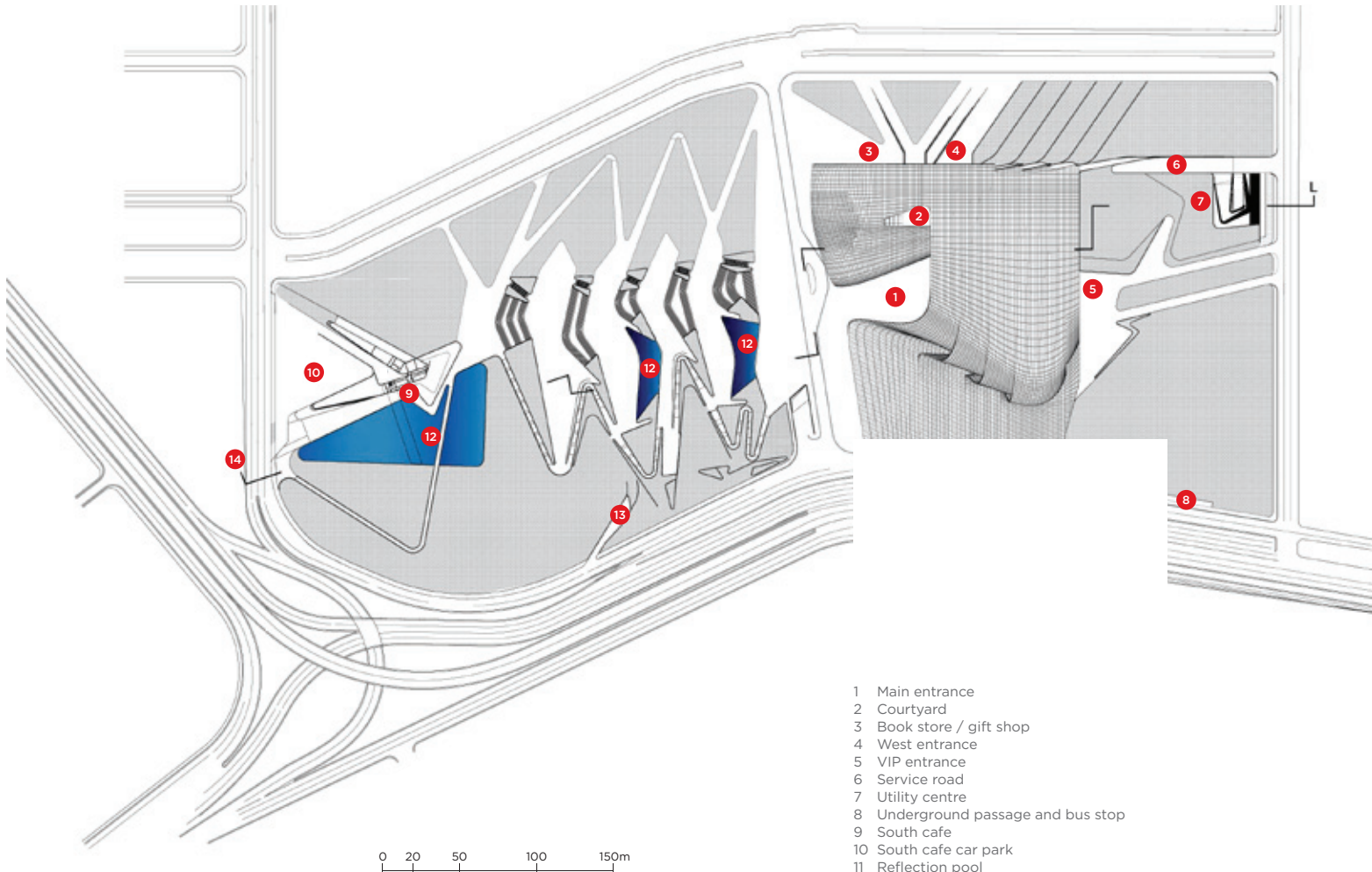
The 11ha site is awkward, sloping north to south down 20m from the main volume to a satellite building, the Pond Café – a triangular pavilion beside which eventually the Baku Metro will arrive. This small volume's dramatically cantilevered roof may faintly echo Hadid's upward, pointy concrete gesture in her

1 (previous page) – The Heydar Aliyev Center's main building is above the landscaping of a slope dropping to the Pond Café, situated under the triangular green roof in the foreground

2 (opposite page) – On the south-east side, the skin of the building is a continuum of the urban plaza beside it

3 – ZHA project architect Saffet Kaya Bekiroglu

- 1 Main entrance
2 Courtyard
3 Book store / gift shop
4 West entrance
5 VIP entrance
6 Service road
7 Utility centre
8 Underground passage and bus stop
9 South cafe
10 South cafe car park
11 Reflection pool
12 Car park exit (underground)
13 South cafe
14 Link tunnel



seminal Vitra Fire Station (1993), but it is actually horizontal and topped by grass. Seen from a vantage point up the slope, this green roof becomes just one of many triangular planting islands in a great descending cascade of terraces dripping with water features, including lakes and walls of waterfalls. Wide stairs, escalators and zig-zagging paths connect them. Lighting is from LEDs set in the balustrades – the space is deliberately clear of lamp posts or bollards (Bekiroglu despaired when a contractor suggested floodlighting towers. For the full lighting story, see p234). The whole composition, despite all its corners being rounded, is one of sharp angles, in contrast to the great swooping structure at the top of the hill. As Bekiroglu explains, ‘The different landscapes and surfaces have different functions, use different materiality and therefore, a different architectural language.’ A 1500-capacity car park lies under the landscaping, connected by tunnel to the main building.

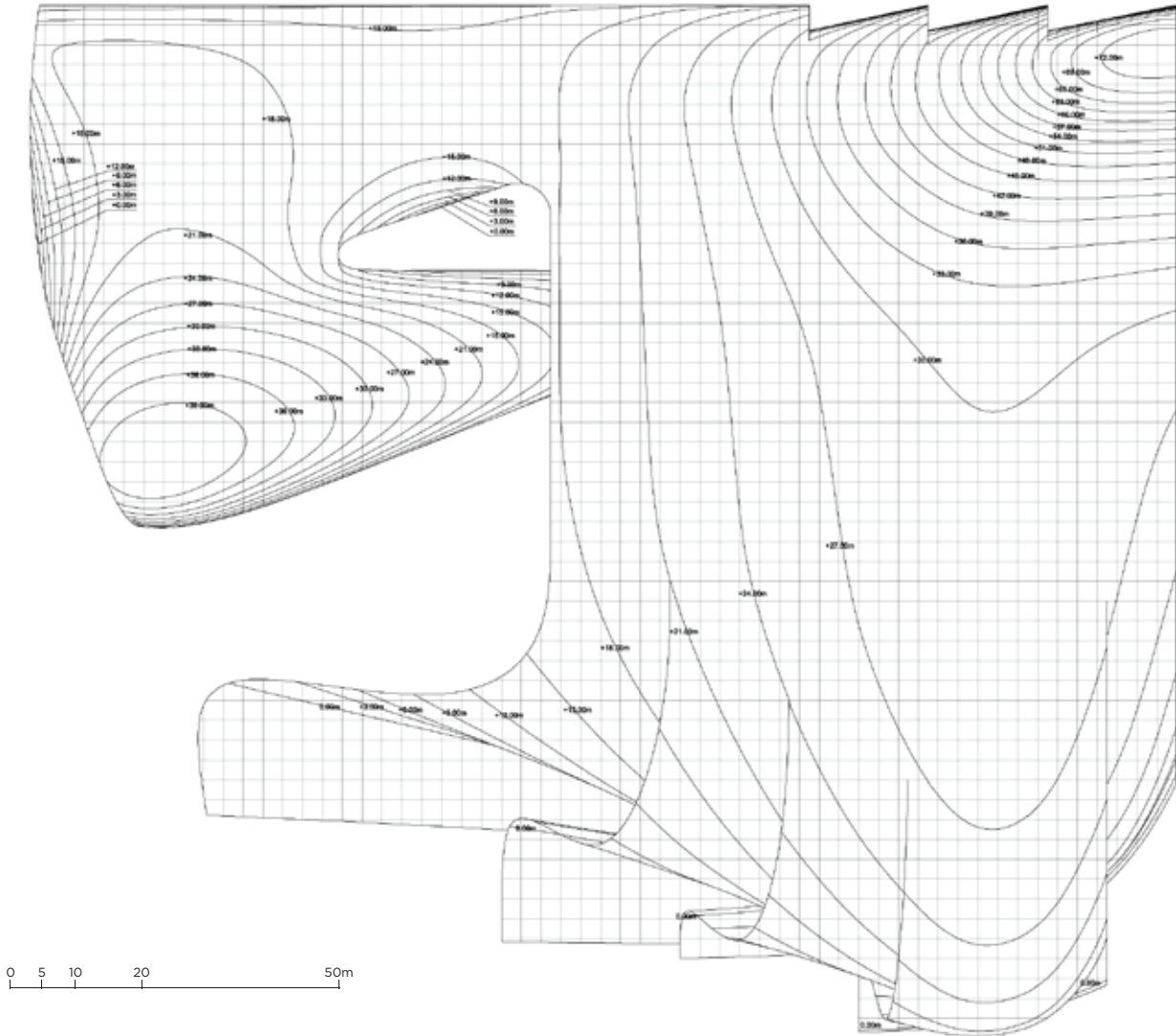
This centre is defined by its extraordinary white shell envelope. It starts as an apron of urban plaza on the eastern side, and curves up into a convex wall around the auditorium wing, staggered by gill-like fissures. The 50,000 sq m skin is a continuous whole, made up of 16,150 panels, 70 per cent of which become different trapezoids because of the surface curvature. ‘If the surface is the music, then the seams between the panels are the rhythm,’ says Bekiroglu. The seams certainly amplify the non-Euclidean geometry of the whole project, like grids in popular

diagrams showing gravity bending space. But Hadid is keen to stress that this is not the reason for the panels, but rather ‘the exterior skin has been sub-divided taking into consideration the practicalities of fabrication, transportation and installation on-site’. The glass-fibre-reinforced panels were devised by engineering and architecture firm Werner Sobek of Stuttgart, and are basically made of a concrete composite in the plaza and a lighter plastic in the building skin. They are dirt-repellent, crucial in a city with air polluting oil refineries – as Bekiroglu points out, ‘Baku was once nicknamed the “black city” because of its oil industry. We used white as a sort of antidote.’

The smooth panels are merely the surface of the centre’s high-tech skin. No less than four layers lie beneath them, performing functions such as insulation and waterproofing, and the seams carry elements like rainwater gullies and lightning conductors. All this is mounted on a vast metal space frame.

Sandwiched between the external and internal skins and painted blue despite its invisibility, the double-curved space frame by MERO-TSK of Germany is another solution to the challenges of such difficult architecture. Without it, the space would have been full of columns. It also grounds an aerodynamic envelope from which wind creates vertical lift as if was an aircraft wing – and this in a city known for its wind. On top of this, the frame has to maintain rigidity in seismically active conditions and the centre’s two concrete cores have poor

Topographical analysis of building envelope



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4 – The Heydar Aliyev Center rises to a height of 74m on its northern corner

5 – The glazed north-east facade and the tower, originally intended as a library



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6 (previous page) - The shape and design of the centre arguably makes it the most distinctive building in Baku

7 - The centre is entered from the south-west side, which includes the Heydar Aliyev Museum

8 - From the western corner, the centre may evoke a great whale

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9 - The Heydar Aliyev Museum is in a part of the building set forward to the rest, here to the right of the roof's parabolic dip to the ground

10 - The multipurpose room where banquets can be hosted is ground floor, centre of the north-west facade

soil to contend with, requiring 20.5 km of piles. Construction began in 2007 and was completed in time for a soft opening in May 2012. A fire on a patch of exterior cladding made headlines last July, but damage was superficial. The centre was officially opened in November.

Throughout the building, epoxy resin floors curve up into white walls creating interiors with the smoothness of wombs, inlaid with parallel arcs of lighting like meteor showers. There are three main parts to the building. A permanent museum to Heydar Aliyev, the centre's namesake and Azerbaijan's last Soviet and first independent leader, lies within a five-storey rounded asymmetric cone cut by south-facing vertical glazing. Floors create terraces that climb towards the rounded gothic arch of its peak, under which fourth-floor admin offices are situated. Daylight falls through them into the building's interior.

The Aliyev museum is set just to one side of that dramatic point facing south over the slope, where, as if it had melted into a distorted paraboloid, the outer envelope plunges down to kiss the ground. Bekiroglu calls this point the 'Nureyev moment', after the ballet legend Rudolf Nureyev. 'One does not realise if it is structural or not, if it is landing or taking off', he says – it is 'a moment where it questions the existence of gravity'.

A half-tubed first floor bridge approaches the 'Nureyev moment' from open spaces to the north of the building, and turns to link into the museum. It is seductive, surprising and

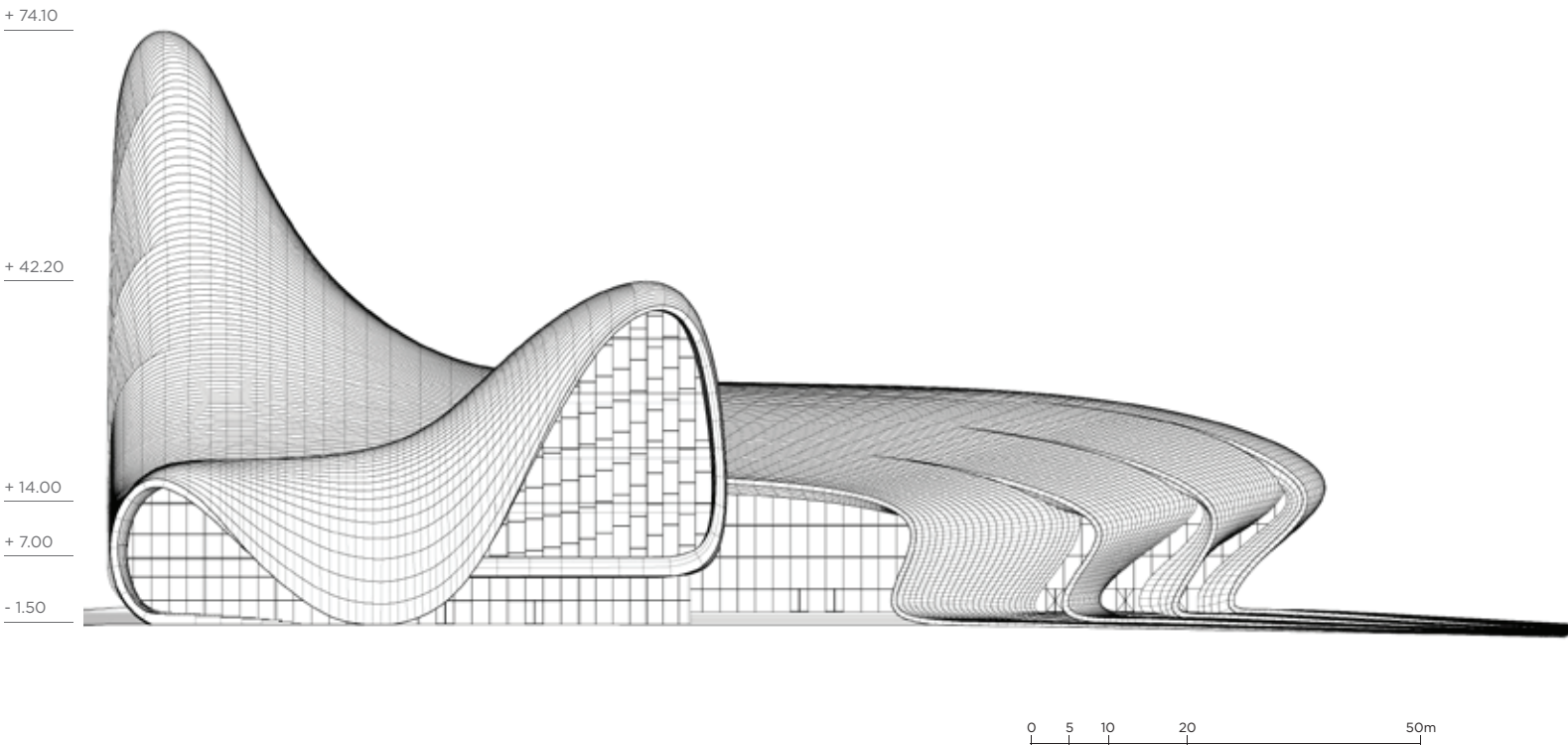
typical – there is virtually nowhere in the building that fails to reveal spatial drama. Some of the Aliyev Center's interior passages would make a great location if the last section of Woody Allen's movie 'Everything You Ever Wanted To Know...' was ever reshot.

The main entrance is set back from the museum, in a wide facade between it and the white plaza of panels to the east. This is the reception, or 'welcome zone', and immediately ahead is the auditorium and convention centre part of the building, to which we shall return. The welcome zone, though, stretches across the building, and its facade is penetrated by the exterior of the museum volume in front of it. Here, it has fallen in height and now ends in a cross-section shaped like a curl of butter. Turn into it and you are under the museum, but continue crossing the welcome zone and you pass an interior courtyard beside it, then an open cafe zone beneath a bridge and ramp and beside the north-west facade.

Unlike all other interior spaces, the 960-seater, 1200 sq m auditorium is not white but lined completely with American oak, layered in great laminate arcs that give it an instant, organic warmth. Bekiroglu comments that 'our intention was to use a traditional material with very contemporary lines.' He cites two previously built references: the Walt Disney Hall (2003) in Los Angeles, on which he worked as junior architect while at Frank Gehry's studio, and the acoustically innovative, expressionist

11 (opposite page) – Beneath the great sculptural form of the north-west side, glazing provides natural lighting to the cafe areas inside

South West Elevation





Berlin Philharmonic Concert Hall (1963) by Hans Scharoun.

Perhaps the most conventional space in the centre is the adjacent multipurpose hall, with a kitchen along one side of it. This is almost a standard rectangular space, but its corners are rounded and ridged lighting edges cut along walls and ceiling.

The third part of the building was originally intended as a library, and although digital library options remain open, its open spaces on six floors (including ground) are being used for temporary exhibitions, with a small functions floor at the top. They rise into the highest part of the Aliyev Center, the 74m-high northern tower, creating a chain of balconies along a direct line of sight that connects the ground floor with the arching cathedral-like space at the very top. The tower presents a sheer glazed facade to the north-east, looking out over a lawn and small outbuildings; behind them, a vast cliff of Soviet-era apartment housing. Perhaps surprised at their luminous new neighbour, the knackered flats have been spruced up with lightly ornamental new cladding.

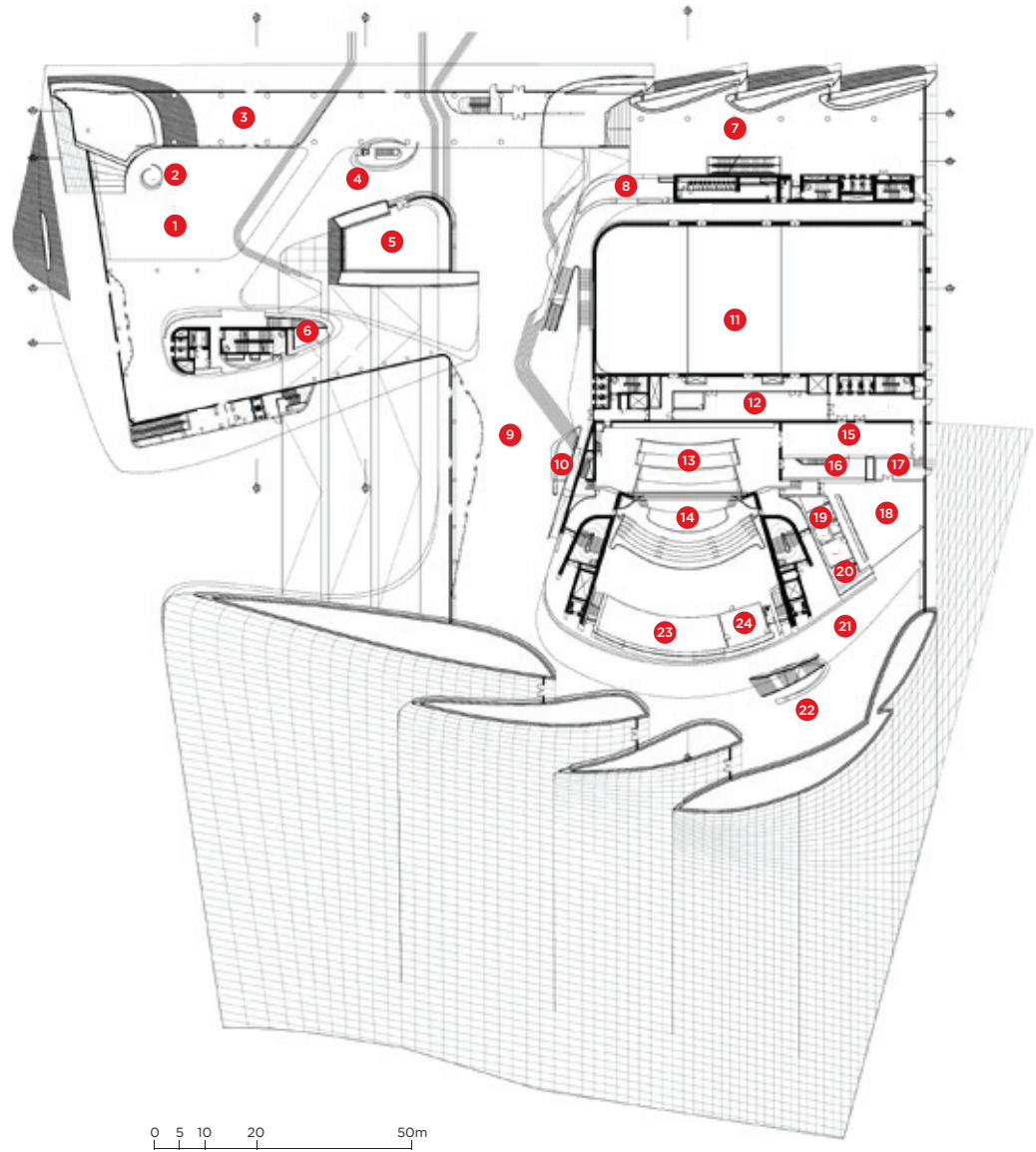
Seen from the south, towering behind the rest of the building, the northern peak might seem an easy compositional gesture, hiding its intent like Philip Guston's hood in his painting *The Studio*. But from the west, the tower takes on another role as the long, straight-edged north-west facade becomes legible. This entire side of the building is bone-shaped, narrowing in the middle (under which is glazing that lights the ground-floor cafe

areas), but the north end continues opening, full-height glazed flutings accentuating a pulse in its triumphant, trumpet-like rise. Move further to the north, and the tower becomes a vertical triangle of glass, its hypotenuse gently sagging. The north-west side of the Aliyev Centre particularly presents itself as a gargantuan, uplifting sculpture which totally transforms as you change viewpoint.

Inevitably, the early 20th-century Russian movements of constructivism and suprematism are cited as key influences in Hadid's work. But for the Venice Biennale of 2012, given the task of finding 'Common Ground' by fellow British architect Sir David Chipperfield, she and Schumacher announced that 'our recent work connects to a rather different historical strand of research'. There they displayed archives, models and projects from research into mid-20th-century pioneers of thin-shell structures Félix Candela and Heinz Isler, and tensile structure master Frei Otto.

Hadid and Schumacher had found a resonance between how these designers had harnessed the forces arising naturally from the geometry of structural surfaces, and the Hadid practice's parametric approach. They learned lessons from these pioneers, and the rest of the exhibition showed how they had realised them. Dominating the Arsenale room was an installation of pleated steel called ARUM, but just as spectacular was a row of spot-lit curvy surface models, all hanging pristine and white

Ground-floor plan



- 1 Museum lobby
- 2 Information desk
- 3 Book store / gift shop
- 4 Museum cafe / bar
- 5 Courtyard
- 6 Welcome gallery
- 7 Welcome zone
- 8 Cloakroom
- 9 Conference centre lobby
- 10 Information desk
- 11 Multipurpose auditorium
- 12 Service kitchen & lobby
- 13 Main stage
- 14 Auditorium
- 15 Loading area
- 16 Backstage area
- 17 Security
- 18 VIP entrance / president's room
- 19 Restroom
- 20 Kitchenette
- 21 Auditorium lobby
- 22 Auditorium bar
- 23 Cloakroom
- 24 Storage

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12 (previous pages) – A great curved way descends to the outer skin's signature dip, which has been called 'the Nureyev moment'

13 – The curl penetrating the welcome area's facade gives little indication of the museum volume behind

14 – A great first-floor tunnel-bridge is devoid of straight surfaces



15 – The auditorium, clad in American hardwood, is the only interior space that is not white

like manta rays. These were recent Hadid designs, including the Aliyev Center's exterior shell, the Serpentine Sackler Gallery extension and London Olympic Park's Aquatics Centre. At the Serpentine, Hadid had made two tensile structures before (the 2000 pavilion and a 2007 marquee), but the latest is the first permanent structure, configured on five columns shaped like Chinese soup spoons to scoop in light through skylights, over a restaurant adjoining the 1805 gunpowder store converted to a gallery. Though tiny compared to the Heydar Aliyev Center, it is a sibling, not just in being informed by the same research, but also in its white fibre glass skin (here a membrane rather than panels) and its dramatic plunge to touch the ground.

Candela's work leaves perhaps the clearest visual clues in the Aliyev Centre. The Spanish-born architect was exiled to Mexico where his feats of thin concrete engineering include the Los Manantiales restaurant at Xochimilco, Mexico City (1958), a pavilion structure of eight radial hyperbolic paraboloid saddles, which form arches to sit under. (By chance, it was crudely cloned in Baku in the Sixties for the waterside Pearl Restaurant). Interestingly, the Aliyev Center's 'Nureyev' point is also produced by a hyperbolic paraboloid, although distorted, and the facade housing the museum beside it echoes Candela works like the Bacardi Rum Factory, Cuautitlan (1960). However, as Bekiroglu points out, 'the relationship to the ground is different. Our building emerges out of the ground, Candela's restaurant is

more like an object which landed there'. (Hadid built a structure directly based on another of Candela's paraboloid-based projects in Beijing for the China Architecture Biennale last year).

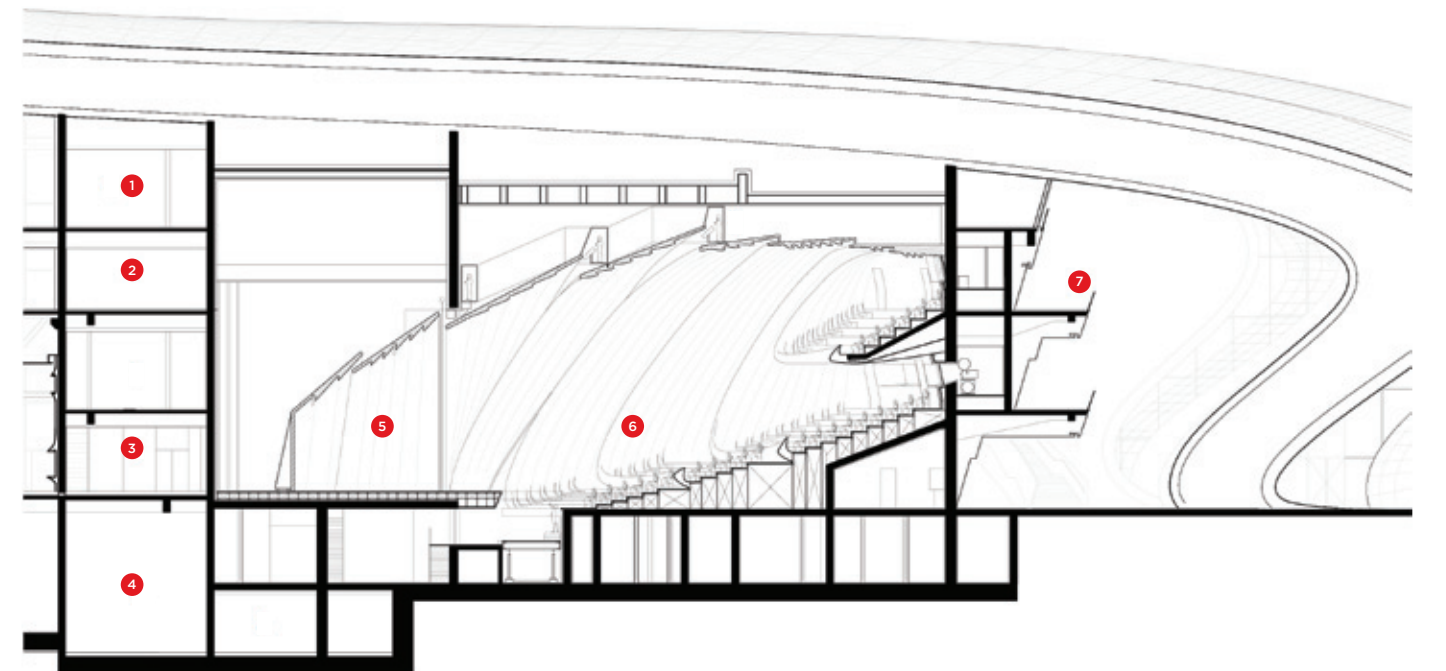
Schumacher comments that 'modernist engineering was based on dividing [a design] into different parts. Good for calculation, but bad for structural integration'. However, 'it's all coming together' with the digitisation of design, engineering, construction and so on, which now enables something with the complexity and vision of the Heydar Aliyev Center to be built.

With the West's current austerity, surely such projects are outmoded, as design gets back to basics? 'I reject that argument,' says Schumacher. 'Even if growth is slow, culture keeps evolving.' He maintains that forward-looking, new-build structures are getting 'materially lighter, more efficient', making them 'more competitive' against traditional buildings.

The Heydar Aliyev Center is one of those surprising projects that unexpectedly puts a city on the architectural map, like Utzon's Sydney Opera House or Gehry's Guggenheim Bilbao. With its lessons from past masters of thin sculptural surfaces, it also headlines a new wave within the expanding cornucopia of visionary projects from one of the most original architectural thinkers of our times. Not least, the sublime centre is a giant step forward in Hadid's journey into total fluidity. ►

For the story on lighting the Aliyev centre, see page 233

Auditorium section



- 1 Network room
- 2 Meeting room
- 3 Service kitchen
- 4 AHU room
- 5 Main stage
- 6 Multipurpose auditorium
- 7 Balcony

0 1 5 10 20m

HADID ON BAKU

The architect speaks to Blueprint about her approach to creating the new Heydar Aliyev Center in Baku

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Blueprint: The Heydar Aliyev Center in Baku and the Serpentine Sackler designs are both characterised by fluid roofs that dramatically plunge to kiss the ground. Is that a coincidence?

ZH: The office works more like a school of thought, and there are lots of ideas and influences that nurture each other. Actually, if you look at the Aquatics Centre and Aqua Table, you can see the consistency and research in how to relate to the ground.

Blueprint: Was there an initial concept sketch for the Heydar Aliyev Center design?

ZH: It is more than a singular, initial sketch in the conventional sense. There are references within our research and repertoire of projects that explore architecture as landscape. The computer was used by the team at an early stage as it gives much greater understanding and control of complex geometry.

Blueprint: Does the fluidity of those designs ultimately have any root or inspiration in Arabic script?

ZH: It is the mathematics – the mix of logic and abstraction. I became interested in geometry while studying mathematics [at Beirut University, before moving to London]. I realised there was a connection with the logic of maths to architecture and the abstraction of Arabic calligraphy. Geometry and mathematics have a tremendous connection to architecture.

At the beginning of the 20th century, certain abstract movements in art were looking at figurative art, and also certain geometric abstractions, as well as Arabic calligraphy. I'm absolutely sure the Russians – Malevich, in particular – looked at those scripts. The calligraphy you see in architectural plans today is to do with the notion of deconstruction and fragmentation in space.

Blueprint: You used to talk of 'the drawing as an explosion', but has this idea matured into a less fragmented vision, as projects integrate into their architectural and urban settings, such as the Serpentine's Magazine building or a hillside in Baku?

ZH: I have always been interested in the concept of fragmentation and with ideas of abstraction and explosion, where we were deconstructing ideas of repetitiveness and mass production. So the work started out with abstraction. But my ambition was always to create fluid space – on all levels. The layering process increases the complexity to where the buildings become like a landscape. It's not linear; it changes according to what is appropriate for the project. ■

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16 – Zaha Hadid

17 – A model of the Heydar Aliyev Center skin hung in ZHA's Venice Biennale 2012 installation 'Arum'

18 – The Serpentine Sackler Gallery extension beside the re-purposed Magazine building, built in 1805

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