



### **Dream Architecture**

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As building materials and technologies advance, architects are creating new kinds of urban environments. Among the innovations showcased in this book that are contributing to new architectural forms are parametric modeling enabled by computer-aided technology, environmentally friendly building skins, and HOPSCAs – a hybrid building type – that can house hotels, offices, parking, shopping, a convention center, and apartments under one roof. The »dream« buildings in this book reflect a changing architectural and cultural environment, and the processes that turn these concepts from vision to reality will open a new chapter in architectural history.

Many of the architects represented here are addressing themes of developments in structural and material technologies that will allow infinite possibilities in form. Within the new urban landscape of greater scale and complexity, architects must either find appropriate »new textures« or construct new rules.

One imaginative process demonstrated here is the merging of nature and architecture – sometimes accomplished through the use of natural forms, and at other times through materials and levels of energy consumption. A related new process, bionics – the application of biological principles to the design of architectural systems – has been used to streamline buildings and simulate nature.

Yet another process at work today reflects a continuity with Modernism in architecture in which simple forms as well as traditional materials and construction methods cannot disguise the elegance of their conceptual rigor. This choice leads to two contrasting ways to adapt: to »exceed« or to »retreat«. Most of the featured projects in this book embody the method of »exceeding«. With this approach, architects use height and context to create new urban spectacles. The contrasting strategy is to »retreat« by creating introverted projects that interject a built form of silence and tranquility into the noise and chaos of the city.

We also include examples of comprehensive projects that attempt to reply to the urban question and suggest a future era of »the monumental building as city«. These immense projects can cover several city blocks in which architects strive to find levels of balance between city and street.

By examining the thought processes behind these bold and innovative designs we can formulate some essential questions: how does technology bridge the boundaries between different countries and cultures? Will our cities come to resemble those in science fiction movies? Will the notion of »form follows environment« be the natural successor to »form follows function«? Although we can't answer these questions at present, we hope that merely asking them might provide insights that will shape our views and spur creativity.

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# Dream Architecture

## Today's Designs for Tomorrow

edited by  
**Xing Rihan**

As building materials and technologies advance, architects are creating new kinds of urban environments. Among the innovations showcased in this book that are contributing to new architectural forms are parametric modeling enabled by computer-aided technology, environmentally friendly building skins, and HOPSCAs – a hybrid building type – that can house hotels, offices, parking, shopping, a convention center, and apartments under one roof. The “dream” buildings in this book reflect a changing architectural and cultural environment, and the processes that turn these concepts from vision to reality will open a new chapter in architectural history.

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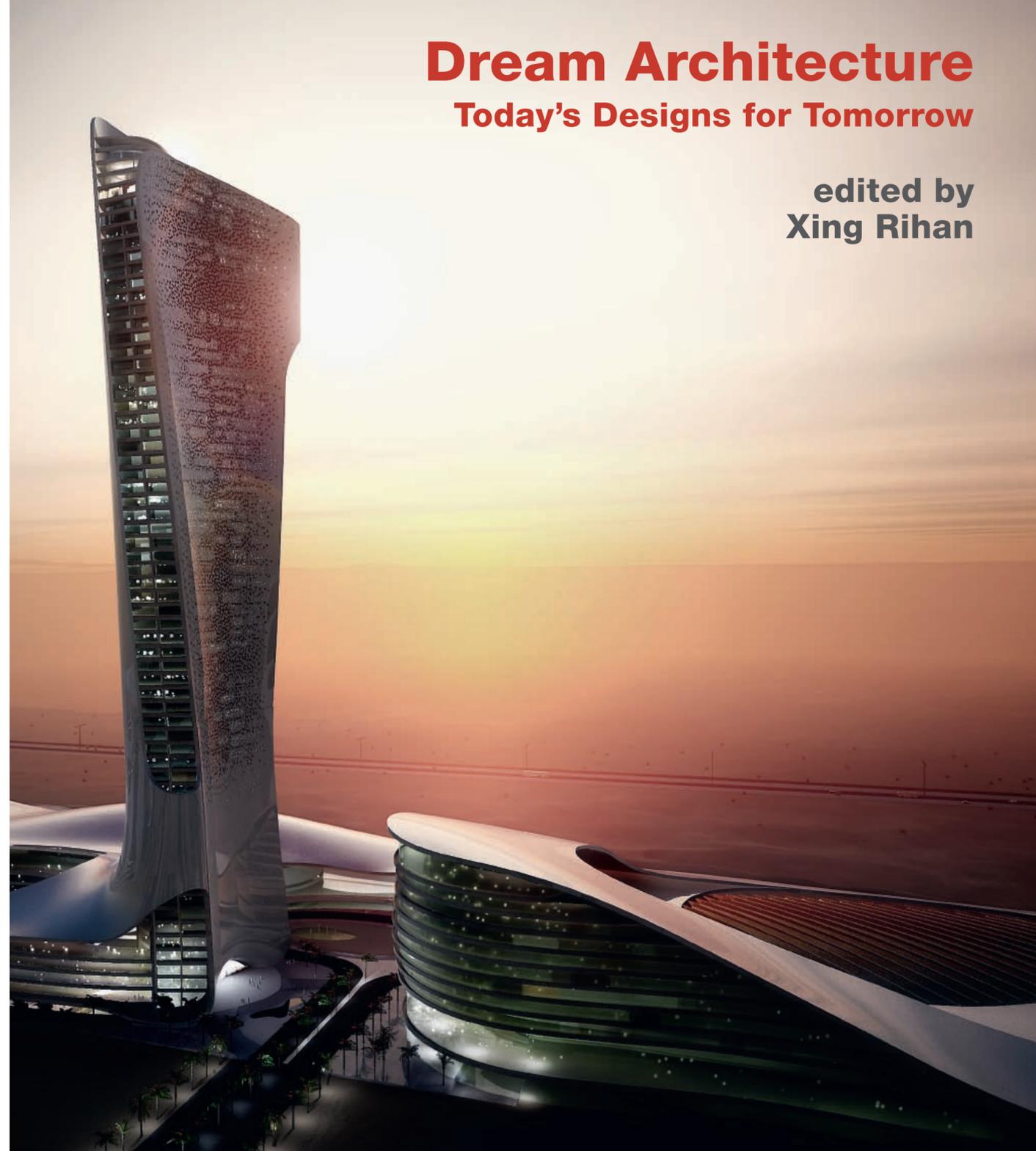
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Menges



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**Edition Axel Menges**

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## Preface

As building materials and technologies advance, architects are given opportunities to create new kinds of urban environments. Among the recent innovations showcased in this book are parametric modeling, environmentally friendly building skins, and the development of the HOPSCA building type – an “Arcology-type” collection of hotel, office, parking, shopping mall, convention center, and apartments.

First, parametric design is the latest trend in architecture to use computer-aided technology. Buildings designed with this 3D system are becoming more common and are beginning to influence the way architects approach urban planning and the design of cities. Streamlined, free-form, and captivating, urban spaces now have the ability to become as flexible and elastic as the building forms that contain them. Tall buildings can now dance on a city’s skyline like colored bands or floating clouds instead of rising from the ground like ancient pyramids.

The second innovation discussed here – environmental technologies in building façades – includes advancements in energy-efficient design and the important impact these technologies are having on architectural character. For instance, ventilated building skins are multi-functional enclosures that are not necessarily required to carry structural loads. As a result, these “breathable” skins can be liberated from the building’s floor plate; they provide a spatial transition between interior and exterior space and thereby transform the visual impact of an architectural design.

The third innovation is the HOPSCA (Hotel-Office-Parking-Shopping-Convention-Apartment) building type, which can be described as “Arcology-like”. Arcology, a concept proposed by American architect Paolo Soleri, is a portmanteau of the words “architecture” and “ecology” that describes a set of architectural principles aimed at designing enormous habitats (hyperstructures) with high population densities. Buildings based on these principles contain a variety of commercial and residential facilities and are conceived to minimize the environmental impact of humans. HOPSCAs could be portrayed as self-contained or economically self-sufficient in the sense of an autarky, allowing people to undertake a range of activities in limited urban space and avoid carbon-based travel. The prime advantage of Arcology principles and the HOPSCA building type is a low-carbon, energy-saving society – an important development for the coming age.

The “dream” buildings shown in this book reflect a changing architectural and cultural environment, and the translation processes that turn

these concepts from vision to reality will open a new chapter in architectural history. Three factors will be critical in shaping these processes:

**1. Technology.** Only with new discoveries in both structural and material technologies can these new building types be physically realized. Even if designs remain virtual, the implications of such tectonic developments still have profound implications for the meaning of architecture.

**2. Capital.** Buildings can portray images of wealth. Architectural ideas spread internationally, following the process of globalization being promoted by capital investments. “Dream” buildings can just as easily be built in Africa as in Europe or North America. Even in the initial phases of investment, dramatic architectural statements may be one of the first expressions of desired future growth for a location. Countries, regions, and cities look to bold architecture to express their intentions, creating a receptive environment for experimentation and imaginative visions. Examples can be seen in rapidly developing regions such as East Asia and the Middle East. Against this background of aspiration, and with the capital to produce them, many fantastic visions may become realities.

**3. Media.** Skillful media placement can catapult new styles of buildings to international prominence, intensifying their influence. Often, the more controversial a project, the more attention it receives. In many cases, attention itself indicates success. With the help of the media, some buildings leverage the values they represent far beyond anything their physical reality may warrant. Whether perceived as positive or negative additions to the cityscape, the impression these buildings make is undeniably provocative. Although many of these buildings may remain at the “dream” stage, if they do come to be built the results may be astonishing.

Many of the architects represented in this book share similar viewpoints and values. They are interpreting architectural space and typologies simultaneously in different locations around the world, and all address 1) developments in built form, 2) the new urban landscape, 3) the merging of nature and architecture, 4) continuity of modernism in architecture, 5) the architectural reply to the urban question, 6) bionic architecture, and 7) buildings that challenge limitations.

### Developments in built form

Developments in structural and material technologies enable constant change in building form. Based on functional logic, form shows infinite possibilities. Freedom from physical constraints allows designers to translate their own unique

logic into built spaces that are unprecedented in appearance. CAD functions make the dynamic shapes that appear throughout this book possible. Regardless of style, scale, or complexity, all of the projects presented – such as Zaha Hadid’s Maggie’s Center Fife and Nordpark Cable Railway, Fuksas’ Zenith Music Hall, and the Cheongna City Tower designed by Various Architects – have strong emotional impact and invite intense speculation.

Buildings that break free from classical composition can be both elegant and allusive, expressing a decidedly extroverted sensibility. The Kunsthalle Bremen by Urban Environments Architects, for example, resembles a flower beside a pool, forming a calm landscape while revealing an inner energy. Similarly, Zaha Hadid Architects’ Innovation Tower in Hong Kong projects a quiet aloofness in the midst of the city.

Steven Holl Architects’ Sliced Porosity Block proposes a topological relationship among the various parts of the building. The ambiguity among the parts opens the door to different interpretations of constantly shifting experiences from multiple viewpoints. The firm uses the same model to express the interplay between buildings and their sites. Whether in terms of figure or scale, Holl’s Meander project is a building that dissolves into its surroundings without losing its essential and distinctive character.

### The new urban landscape

As the scale and complexity of the city continue to increase, architects must either find appropriate “new textures” or construct new rules. This choice leads to two contrasting gestures of adaptation: to “exceed” or to “retreat”.

Most of the featured projects embody the method of “exceeding”. With this approach, architects use height, context, and Pop allusions to create new urban spectacles. Whereas height has long been a technique for differentiation, style now plays a crucial role as well. For example, laN+’s Cheongna City Tower in Incheon, Korea, demonstrates ever-changing form. To magnify this effect, ideal sites must be chosen where the environment can intensify a building’s object-like quality. Buildings such as John Portman and Associates’ 151 Incheon Tower and Songdo Landmark City dazzle with the sheer scale of their urban infrastructure. Some new projects, such as the Tour Signal project in Paris, will work with the existing landscape to magnify their intended effects. With a sufficiently large site, architects can create an integrated building group, part of the trend toward the monumental. Against the long-accepted background of Pop

architecture, the Market Hall by MVRDV uses color and large-scale patterns to mark its significance within the city.

Projects that “exceed” call attention to themselves; the other strategy featured in this book is “hiding in full view” or “retreating”. In contrast with the extroversion of the preceding examples, introverted projects such as the 21 Design Sight by Tadao Ando Architect & Associates introduce a built form of silence and tranquility into the noise and chaos of the city.

In comprehensive projects, the scope of which can cover several city blocks, architects strive to find different levels of balance, such as that between city and street. The example in Oslo designed by Jensen & Skodvin Arkitektkontor As, Arne Henriksen Arkitekt As, and C-V Hølmebakk Arkitekt shows how different materials can lead to multiple readings of scale within the urban environment. At street level, this project respects the context of the surrounding older buildings, using an elegant and modest formal language appropriate to human-scaled public spaces. Simultaneously, on the scale of the city, the project’s enormity makes an important statement in the skyline. This project demonstrates the appropriateness of using different design strategies at different levels to address the spatial questions that abound in developing cityscapes.

### Nature and architecture merge

Some of the projects in this book are clearly inspired by natural form. Others require explanation in greater depth to make evident the sustainable relationship between the building’s materials and energy consumption.

For example, in the Leonardo Glass Cube exhibition pavilion with conference rooms designed by 3deluxe, the building’s appearance both refers to and interacts with nature through its skin. The irregular framework of its exterior wall spreads to the lawn, merging the visual image and pattern of grass with its physical texture and reality, a seamless merger of the built and the natural. Cheongna City Tower in Incheon, Korea, takes nature to the sky with a monumental bridge that soars between buildings, expressing an urban yearning for nature while simultaneously creating a spectacle on an urban scale.

The work of Urban Environments Architects approaches nature differently. Rather than literally referring to natural form and image, the firm brokers energy exchanges, factoring the importance of nature into the fabric of its calculations. The Schaumagazin Abtei Brauweiler project uses solar panels as an important design element; the panels represent the point of energy transforma-

tion between the building and the outside world. The building itself has the capacity to change the way we think about the interface between buildings and the environment.

### Continuity of Modernism in architecture

Some of the projects represented in this collection do not adopt a flamboyant, extroverted architectural stance, but nevertheless possess the true spirit of Modernism. Simple form as well as traditional materials and construction methods cannot disguise the elegance of the conceptual rigor of projects such as the Manchester Civil Justice Center from Denton Corker Marshall and Blue Residential Tower by Bernard Tschumi, which embody calmness and restraint within the city.

### An architectural reply to the urban question

As HOPSCAs develop toward the next stage, they merge with the urban infrastructure. The Seoul Performing Arts Center by Andrés Perea integrates the bridge, roads, and urban elements under one huge roof, a hybrid space where many programs can co-exist. The gateway designed by Snøhetta, a self-organizing system in the desert, assimilates the functions of the city and could be called “Desert Utopia”.

Foster + Partners’ Crystal Island in Moscow also combines multiple programmatic requirements under one superstructure. These projects suggest a future era of “the monumental building as city”.

### Bionic architecture

Bionics – the application of biological principles to the design of architectural systems – has been used to streamline buildings and simulate natural figures. Many contemporary buildings show more association with biology than with the rectilinear geometries of the past. The Abu Dhabi Performing Arts Center by Zaha Hadid Architects suggests the wings of an insect. Galzigsbahn, St. Anton am Arlberg by Driendl\*Architects, looks as if it is supported by animal bones. Similarly, the Hoverfront project resembles a huge leaf.

### Buildings that challenge limitations

Architects challenge limitations through bold and innovative conceptual thinking. The subsequent physical results can be either spectacular or visu-

ally chaotic as they address the sheer magnitude and complexity of life in the age of information exploration. The New City Center Riga by the firm of Giencke & Company demonstrates a multi-faceted complexity of this kind as it tries to reconcile history and reality among the various functional areas.

This collection of structures reveals not only physical characteristics, but deeper values and meanings. By examining the thought processes behind the design, we are able to formulate some essential questions:

How does technology bridge the boundaries among different countries and cultures? Will our cities come to resemble those in science-fiction movies? In the development of architectural thought, from classical to contemporary, will the notion of “form follows environment” be the natural successor to “form follows function”?

Could the private agendas of designers and developers become primary factors that will shape the urban public spaces of the future?

Although we can’t answer these questions at present, merely asking them may provide insights that shape our views and spur creativity.

In conclusion, we would like to thank the featured architects for their assistance. This book aspires to predict the future of architecture by examining current work characterized by flexible spaces and smart technologies.



## ZAHA HADID ARCHITECTS

Zaha Hadid is an architect who consistently pushes the boundaries of architecture and urban design. Her work experiments with new spatial concepts that intensify existing urban landscapes in the pursuit of a visionary aesthetic that encompasses all fields of design, ranging from urban scale to products, interiors, and furniture. Hadid is best known for her seminal built works: Vitra Fire Station, Land Formation-One, Bergisel Ski Jump, Strasbourg Tram Station, the Rosenthal Center for Contemporary Art in Cincinnati, the BMW Central Building in Leipzig, the Hotel Puerta America (interior) in Madrid, the Ordrupgaard Museum Extension in Copenhagen, and the Phaeno Science Center in Wolfsburg. Her central concerns involve a simultaneous engagement in practice, teaching, and research.

Hadid studied at the Architectural Association School of Architecture (AA) in London from 1972 through 1977. She then became a partner of the Office for Metropolitan Architecture, taught at the AA with OMA collaborators Rem Koolhaas and Elia Zenghelis, and later led her own studio at the AA until 1987. Since then she has held the Kenzo Tange Chair of the Graduate School of Design at Harvard University in Cambridge, Massachusetts, and the Sullivan Chair of the School of Architecture at the University of Illinois in Chicago; she also taught as guest professor at the Hochschule für Bildende Künste in Hamburg, at the Knowlton School of Architecture in Columbus, Ohio, and at Columbia University in New York. In addition, she was made an Honorary Member of the American Academy of Arts and Letters, a Fellow of the American Institute of Architecture, and a Commander of the British Empire. She is currently a professor at the University of Applied Arts in Vienna, Austria, and serves as the Eero Saarinen Visiting Professor of Architectural Design at Yale University in New Haven, Connecticut.

Hadid is one of the most influential figures in the world of modern architecture. She is also the first female recipient of the coveted Pritzker Architecture Prize, considered in architecture the equivalent of the Nobel Prize. She established her professional practice in London, and her architectural designs can be found in major cities around the world. These include the BMW Central Building in Leipzig, Germany; the National Museum of 21st Century Arts in Rome; and the Olympics Aquatics Center to be built in London.





## NORDPARK CABLE RAILWAY, INNSBRUCK, AUSTRIA

The Nordpark Cable Railway comprises four new stations and a cable-stayed suspension bridge over the river. It opened in a ceremony at Loewenhaus Station, Rennweg, Innsbruck, on December 2, 2007.

Starting at the Congress Station in the center of the city, the railway travels to Loewenhaus Station before crossing the river and ascending the Nordkette Mountain north of Innsbruck to Alpenzoo Station. The final station is at Hungerburg village, 288 meters above Innsbruck, where passengers can board the cable car to the summit of the Seegrube Mountain.

"I am absolutely delighted to be attending the opening of the Nordpark Railway", stated Hadid. "It is indeed an honor to complete my second project in Innsbruck. The railway reflects the city's continued commitment to the highest standards of architecture and pushes the boundaries of design and construction technology. These stations are the global benchmark for the use of double-curvature glass in construction."

Zaha Hadid Architects won the competition to create Nordpark

Cable Railway in 2005 in collaboration with the contractor, Strabag. The railway is the second project completed by Hadid in the city; the Bergisel Ski Jump was completed in 2002 and awarded the Gold Medal for Design by the International Olympic Committee in 2005.

Hadid says the design for each station adapts to the specific site conditions at various altitudes, while maintaining the coherent overall architectural language of fluidity. This approach was critical to the design for the railway and demonstrates the seamless morphology of Hadid's most recent architecture.

"Each station has its own unique context, topography, altitude, and circulation. We studied natural phenomena such as glacial moraines and ice movements – as we wanted each station to use the fluid language of natural ice formations, like a frozen stream on the mountainside", said Hadid. "A high degree of flexibility within this language enables the shell structures to adjust to these various parameters whilst maintaining a coherent formal logic", the architect continues. "Two contrasting

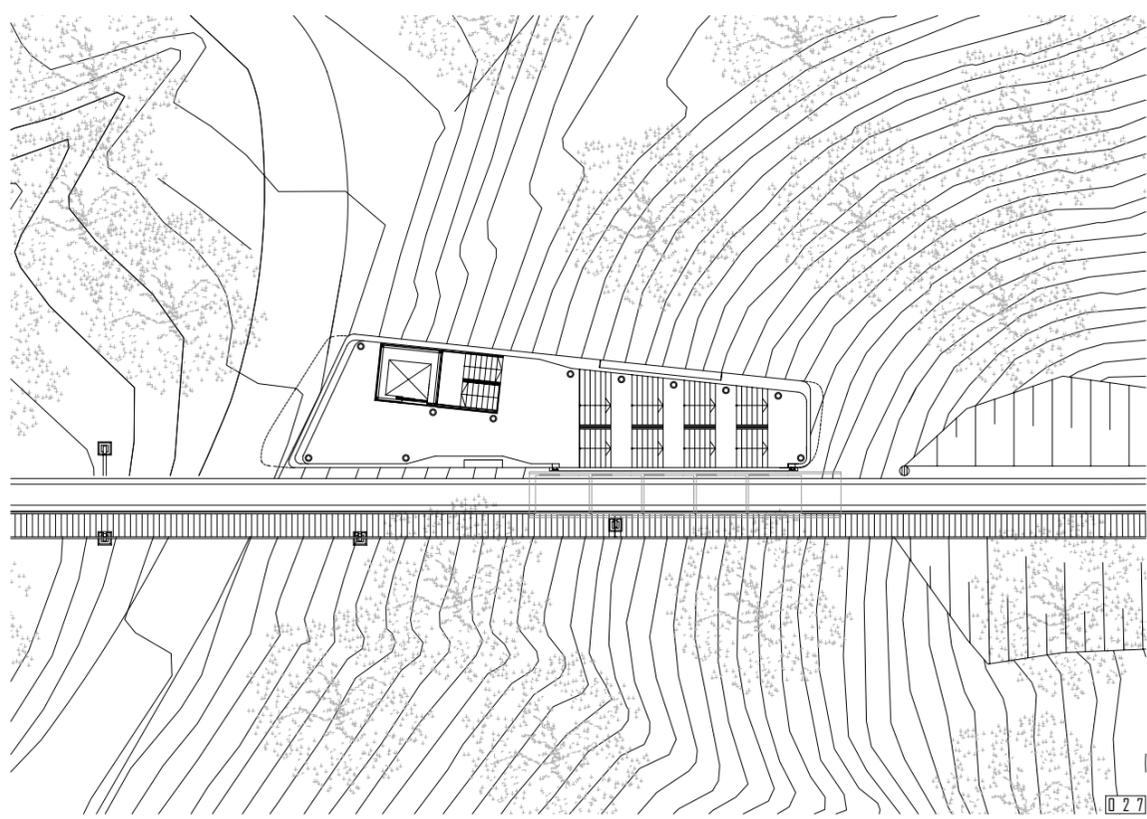
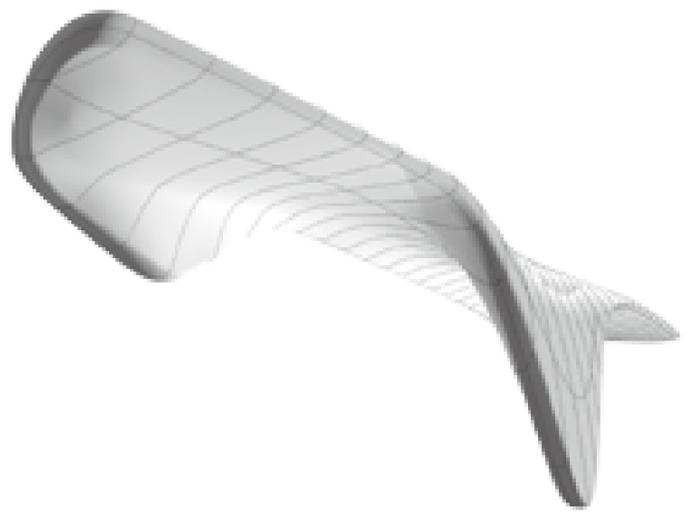
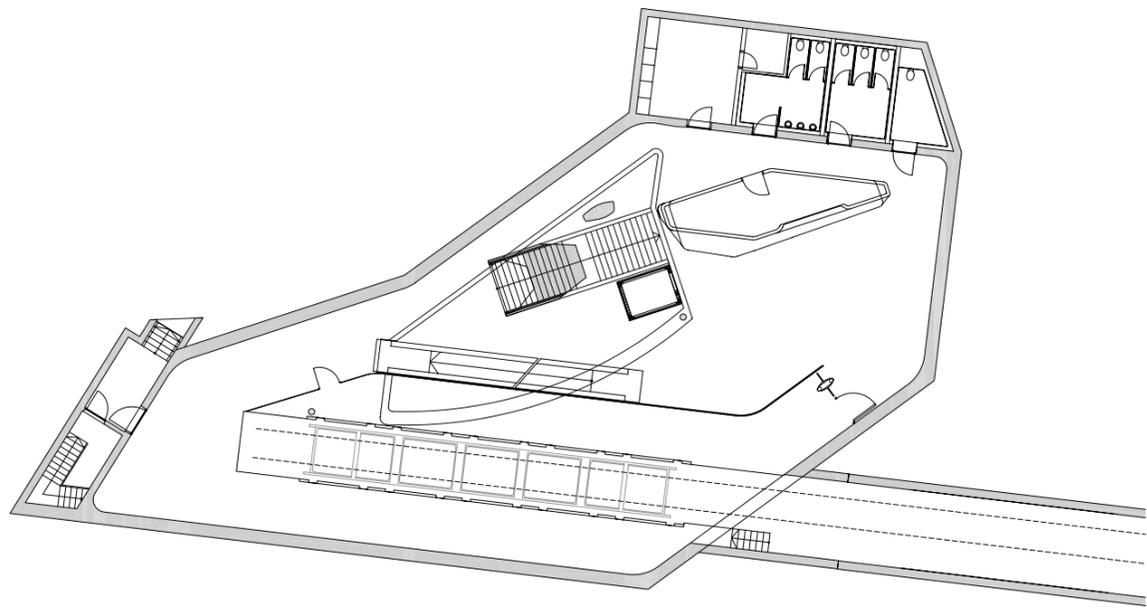
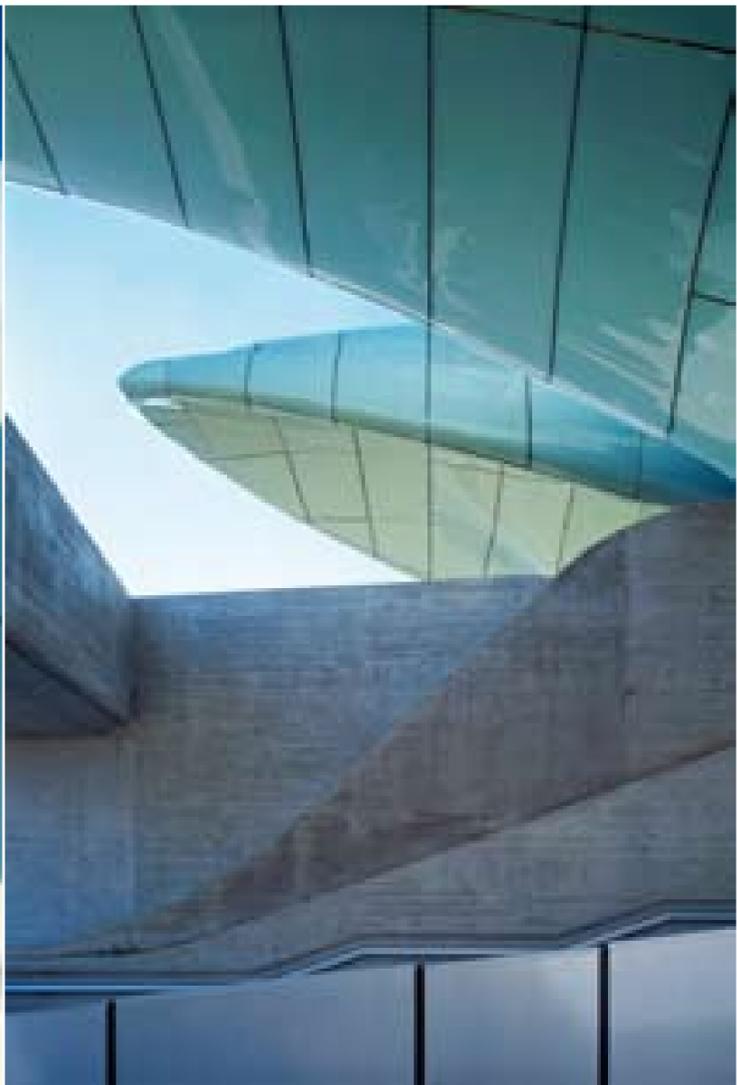
elements. 'Shell and Shadow', generate each station's spatial

quality, with lightweight organic roof structures of double-curvature glass 'floating' on top of concrete plinths, creating an artificial landscape that describes the movement and circulation within."

New production methods such as CNC milling and thermoforming guaranteed a precise and automatic translation of the computer-generated design into the built structure. The architects used state-of-the-art design and manufacturing technologies developed for the automotive industry to create the streamlined esthetics of each station.

The Nordpark Cable Railway continues Hadid's quest for an architecture of seamless fluidity, representing Zaha Hadid Architects' latest contribution to the current global architectural discourse in digital design and construction.







**PERFORMING ARTS CENTER, ABU DHABI, UAE**

Analytical studies of organizational systems and growth in the natural world led to the set of topologies that created the framework for the Abu Dhabi Performing Art Center’s distinct formal language. These natural scenarios are formed by applying energy to enclosed systems and the subsequent decrease in energy caused by development of organized structures. The “energy” of the Performing Art Center in Abu Dhabi is symbolized by the predominant movement in the urban fabric along the pedestrian corridor and the Cultural Center’s seafront promenade – the site’s two intersecting primary elements. Branching algorithms and growth-simulation processes have been used to develop spatial representations into a set of basic geometries, and then superimposed onto programmatic diagrams and architectonic interpretations in a series of iteration cycles. The primary components of this biological analogy (branches, stems, fruits, and leaves) are transformed from abstract diagrams into architectonic design. The central axis of Abu Dhabi’s Cultural District is a pedestrian corridor that stretches from the Sheikh Zayed National Museum

toward the sea. This central axis interacts with the seafront promenade to generate a branching geometry where islands are formed, isolated, and translated into distinct bodies within the structure to house the main spaces of the Center. This diagram of the interacting paths is the primary organizational system for the building, making the movement of the public through the structure an integral feature of the design. The sculptural form of the Performing Arts Center emerges from this linear movement, gradually developing into a growing organism that sprouts a network of successive branches. As it winds through the site, the architecture increases in complexity, accruing height and depth and achieving multiple summits in the masses housing the performance spaces, which spring from the structure like fruit on a vine and face westward toward the water. The building, which reaches a height of sixty-two meters, is part of an inclining ensemble of structures that stretch from the Maritime Museum at its southern end to the Abu Dhabi Contemporary Art Museum at the northern tip. With its center of

mass at the water’s edge, the Performing Arts Center focuses its volume along the central axis of the site. This arrangement interrupts the block matrix, at the Arterial Road, opening views to the sea and the skyline of Abu Dhabi. The concert hall is above the lower four theaters, a location that allows daylight to enter into its interior and offers dramatic views of the sea and city skyline from the huge window behind the stage. Local lobbies for each theater are oriented toward the sea to give visitors constant visual contact with their surroundings. On the north side of the building, the restaurant offers a wide, shaded roof terrace, accessible through the adjacent conference center above the lyrical theater. The Academy for Performing Arts is housed above the experimental theater to the south, while in the eastern tail of the sculpture, retail areas take advantage of the pedestrian traffic using the bridge that connects the Center with the central pedestrian zone.

