

会展体育建筑设计 国际竞标方案

— 哈尔滨国际会展体育中心

Works of International Architectural
Design Competition for Conference
Exhibition and Sports Center

哈尔滨工业大学建筑设计研究院 编

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会展·体育建筑设计国际竞标方案

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序言

今日中国，会展与体育建筑作为超大型公共建筑正日益成为新时期的创作热点，在沿海发达城市或中心城市竞相兴建，其作品所表现的时代性、标志性受到社会广泛的关注。哈尔滨国际会展与体育中心项目也值此 2001 年仲夏登上了国际方案竞标舞台。此后，我们欣喜地看到了来自世界各地著名设计机构的竞标方案，深为其作品所反映的新颖的创作理念、简约的创作手法、丰富的建筑文化所感染，作为本次竞标作者之一深感获益匪浅。尽管此次竞标没能产生出理想的实施方案，但它仍不失是一次高水准的国际创作交流，不乏优秀作品。

此次竞标的创作体验难以忘怀，心中总有一种不尽言的感觉，兴奋亦或怅然，不忍这些方案就此沉寂，很想让同行分享我们创作的快乐与感悟。于是，我和学生们精心编辑此书，真诚奉献给热爱建筑艺术创作的人们。相信不论是此次国际竞标的参与者，还是关注中国建筑发展的朋友们都会为它的诞生而感到快慰。若真能给读者些许启迪和帮助，将是我们莫大的荣幸。愿我们在建筑创作的广阔天际中相会，共创灿烂的明天。

借出版此书的机会，特别鸣谢工大集团及会展中心业主委员会。

梅洪元
2001 年初冬
哈尔滨

Foreword

In today's China, conference, exhibition and sports center as ultra-huge public buildings is increasingly becoming the hot spot of architectural creation of the new era, and construction is booming in developed coastal and central cities. The era and symbolic characteristics of this architecture has already received extensive attention from society. The Harbin International Conference, Exhibition and Sports Center project also stepped on the stage of an international design competition in midsummer, 2001. Hereafter, we were pleased to see the competitive designs that came from famous worldwide designers. As one of the participants in the competition, we have reaped knowledge and been influenced deeply by the novel concepts, concise techniques and rich architectural cultures that were reflected from their designs. Although there was no ideal design implementation that emerged from this competition, it is still considered a high level international design communication with no lack of excellent works.

It's so hard to forget the experience of this design competition. Excited or wistful, there is always something we want to say or do but we just can't let these designs fade away. To share our pleasures, thoughts and feelings with persons of same profession, my students and I have elaborately compiled this book and offered it as sincere tribute to everyone who loves designs of architectural art. I believe that both the participants of this international competition and anyone who follows with interest the development of architecture in China will feel pleased with its birth. It is going to be the greatest honor for us if this book could give readers even a little help and enlightenment. Every spark has its brilliance, and I wish we could meet in the vast horizon of architectural design and start a resplendent tomorrow together.

Mei Hongyuan
Early winter, 2001
Harbin

目 录

Contents

文化内涵 生态内涵 科技内涵	6
Cultural Connotation, Ecological Connotation and Technological Connotation	
哈尔滨会展体育中心竞标综述	16
General Introduction for the International Bidding of Harbin Conference Exhibition and Sports Center	
哈尔滨会展体育中心竞标评审决议	20
Resolution of the Jury for the International Bidding of Harbin Conference Exhibition and Sports Center	
哈尔滨会展体育中心建筑设计方案	21
Works of Architectural Design for Harbin Conference Exhibition and Sports Center	
日本株式会社佐藤综合设计 + 清华大学建筑设计研究院	22
AXS Satow Inc.& ADRI TsingHua University	
德国 GMP 建筑师事务所	42
Von Gerkan, Marg and Partner Architects	
法国米多芬建筑师事务所 + 哈尔滨工业大学建筑设计研究院	60
Wladimir Mitrofanoff Architects & Architectural Design and Research Institute, HIT	
美国 RTKL 建筑师事务所 + 北京建筑设计研究院	76
RTKL & Beijing Architectural Design and Research Institute	
美国 HOK 建筑师事务所 + 黑龙江省建筑设计研究院	92
HOK & HeiLongJiang Architectural Design and Research Institute	
澳大利亚考克斯建筑师事务所 + 上海现代设计集团	108
The COX Architects & Shanghai Modern Architectural Design Institute	
哈尔滨工业大学建筑学院	122
Institute of Architecture, HIT	
中国东北建筑设计研究院	138
China Northeast Architectural Design and Research Institute	
德国赫尔佐格建筑师事务所 + 德国欧博迈亚工程设计咨询公司	152
Herzog and Partner Architects & Obermeyer Planning and Consulting Co.Ltd	

Cultural Connotation, Ecological Connotation and Technological Connotation

—Prospects of conference & exhibition buildings in the 21st century

Flourishing and developing rapidly in China, the conference & exhibition building has become one of the most important compositions for international cities on the turn of century and millennium, taking the role impuising the local economic development and communication with the outside world. It's also the symbol for society prosperity, economy development and technology advancement. In this situation, it's strategically significant to explore the theory and direction of conference & exhibition buildings in the China in 21st century.

I. Connotative reconstruction of conference & exhibition buildings

(I) Organic reconstruction of cultural connotation

It has been commonly accepted by more and more architects that architectural culture is the soul of cities and buildings. Facing the challenge of Intellectual Economy and Culture Globalization, we have to reconstruct the sensible system of architectural culture for the development in the new century. In one of his books *Character of Architectural Culture in 21st Century*, Mr. Bu Zhengwei pointed out that "Real cultural character is needed for future buildings", he also believes that "The quality of architectural design in the future firstly depends on our extensive and profound perception of the connotation of architectural culture, and then the presenting style and character in art for a perfect expression of cultural connotation." Having been effected by numerous ideological trends and sects in the twentieth century, today, the policy of our architectural culture should be change from passive despondence to initiative facing to challenge, from poly-fission to organic reconstruction.

1. Mutual action of cultural connotation

The design for the new-style and multi-functional international conference & exhibition centers must comply with the social and regional culture and background so as to present the highest level of human cultural development.

(1) Mutual action between culture and nature

A unique way communicating with nature thereby a great number of characteristic architectural cultures has come into being on the earth where people are living on the rich natural environment and resources. This kind of mutual action between architectural culture and nature is applied to the designs of many excellent architects and therefore a large amount of impressive works are born. Harbin International Conference & Exhibition Sports Center, cooperatively designed by American RTKL Architects and Beijing Architectural Design & Research Institute, tries to present a primitive but essential harmony between man and nature. The traditional design to be lee and exposed to the sun brings the polymerization of the artificial and natural. The changing of the roofing angles like the trace left by the strong wind on the snow covering the plain, not only brings you a successive and plenty of room, but also continuously reminds you of the essential relation between man and nature.

(2) Mutual action between culture and society

Culture initiates the social activities of human beings. The mutual action between architecture and society can be seen in the relation between architectural culture and social economy, social relation and social education. The real dominator behind buildings is man and the relations between them. Therefore, like man, architectural culture varies, develops, propagates through its own blood vessels and grows stronger and stronger.

(3) Mutual action between culture and region

The mutual action between culture and region is accompanied by the extensive communication in culture, passive or initiative. Globalization is contributing to the growth of inter-cultural communication. At the same time, people become aware of the harm as a unitary cultural model. The metabolism and balance in the cultural ecologic system can't be sustained unless the rich and colorful regional culture is kept. Therefore, mutual action between culture and region has become the natural requirement for the development in the era, improving the pluralism of the culture in the world.

2. Renewal of cultural model

(1) Cultural evolution, broadcasting and concretizing

In the course of propagating, inheriting and developing of architectural culture and other social cultures, the three models evolution, broadcasting and concretizing have come into being. Evolution refers to the sustainable and stable development of architectural culture; Broadcasting refers to the dissemination of architectural culture between different nationalities and regions with the development of social community; Concretizing refers to the renewal of architectural culture between different regions following the mutual conflict, blending and absorbing of different essence. The three laws mingle with one another, improving development of architecture. It's still important way to absorb the essence from our traditional architecture and improve the fusion of the traditional architecture with the different ones (especially from western modern architecture) such as the participation in architecture designed

文化内涵、生态内涵、科技内涵

——21世纪会展建筑发展方向展望

世纪之交、千年转折之际,会展建筑在中国蓬勃发展,已成为国际性城市的重要组成部分,发挥着推动和促进本地区经济发展和对外交流的作用,是社会繁荣、经济发展、科技进步的重要标志。在此形势下,展望我国 21 世纪会展建筑发展方向,探索具有指导意义的会展建筑理论,无疑具有重要的战略性意义。

一、会展建筑内涵重构

(一) 文化内涵的有机重构

建筑文化是城市与建筑的灵魂,为越来越多的建筑师所共识。面对知识经济时代的挑战,面对“全球化”对于地域文化和民族文化的极大挑战,重构建筑文化的理性体系,成为跨世纪的文化发展的必然趋势。布正伟先生在《21 世纪建筑的文化品格》一文中指出:“未来建筑需要真正意义上的文化品格”,他认为“未来建筑的创作质量,首先取决于我们对建筑文化内涵广度与深度的挖掘,然后才是完美体现文化内涵的表现形式与艺术风格问题。”的确,建筑文化在经过了 20 世纪众多思潮、流派的冲击之后,从被动应对走向主动迎接挑战,从“多元裂解”走向“有机重构”,正是各国建筑文化的发展趋势。

1. 文化内涵互动

新型综合化的国际会展中心往往体现了人类文化发展的最高境界与水平,其建筑创作必须置于相应的社会地域文化系统及其运行的时代背景中。

(1) 文化与自然互动

地球拥有丰富的自然环境和资源,生活其中的人们在长期的建筑活动中形成了独特的与自然的交往方式,并且相应地产生了世界上丰富多彩、各具特色的建筑文化,这种建筑文化与自然的互动关联被许多优秀的建筑师应用到建筑创作中,并形成了具有最大心灵震撼力的优秀作品。美国 RTKL 建筑事务所和北京建筑设计研究院设计的哈尔滨会展体育中心力图创造一种“因人而成的,人为与天成的原始而根本的和谐”。“背风向阳”的简单设计原则造成了一系列具有方向性的人工与自然的聚合体,屋面角度的变化肌理如疾风扫过雪原时留下的痕迹,在造成连续而丰富空间效果的同时,不断提示一种人与自然的基本存在关系。

(2) 文化与社会互动

文化产生的另一源头就是人类的社会生活,建筑文化与社会之间的互动关联主要表现在社会经济、社会关系及社会教育与建筑文化的关联上。其实,建筑物后面存在的是人,是社会生活中形成的人与人之间的关系,它使得建筑文化也象人类自身一样随人类社会经济的壮大而壮大,并在变异发展中传承着自己的文化血脉。

(3) 文化与地域互动

文化与地域的互动一般是伴随着广泛的主动或被动的社会文化交流而进行的。全球化(globalization)使跨文化交流日益广泛,但人们也同样认识到,单一文化模式具有很大的危害性。只有保持丰富多彩的地域文化,才能维持文化这一生态系统的新陈代谢和生态平衡。因此,文化与地域的互动,促进了世界文化的多元构成,成为时代发展的必然要求。

2. 文化模式更新

(1) 文化的进化、播化、逐化

建筑文化与其它社会文化一起在传承演变过程中形成了进化、播化和逐化三种发展模式。进化是指建筑文化持续而稳定的发展,这种持续包含着积淀所产生的进步性;播化是指不同民族、地域的建筑文化通过人类社会的交往联系而传播开来;逐化则是指不同地域的建筑文化经过相互冲突、交融、吸收异质而后的更新。这三种规律相互交织促进着建筑文化的发展。吸收我国传统建筑文化精华,大力促进异质建筑文化(特别是西方现代建筑文化)与我国传统建筑文化的交融,仍然是发展我

in China & famous international architects.

(2) Cultural reduplication fusion and integration

How can we realize the fusion of different architectural culture in architectural designs? We can conclude the following three concretizing systems: R&F&I. Which progressively increases in the degrees which different cultures infiltrates and affect one another. R system refers to the collocation and alternation of two or more different cultures in architectural designs. It's the most basic and superficial securitizing phase such as transplanting of simple symbols and plagiarism. F refers to the different cultures infiltration into the local architecture, such as traditional ones into modern ones, foreign ones into Chinese ones. I refers to the fusion in the largest limitation possible of different architecture, so as to make an essential structure and therefore becomes a new cultural style. Much more extensive and profound integration will contribute to the new architecture fully harmonized with and rooted in the social and cultural system, which is a base and guarantee to the whole development of the social culture.

(III) Organic reconstruction of ecologic connotation.

Facing the global crisis in environment, ecology and energy sources produced the bitter result of uncontrollable development at the end of the last century. Man tasted by man themselves people aware that sustainable development should be the best choice. So they apply more and more theories in ecology to their architecture designs so as to establish a new system—"green architecture". They put the cultural connotation in ecology into architecture so as to improve the integration of the artificial and ecological and raise the whole environment benefit.

1. Pursuit of ecologic aesthetics

Based on traditional aesthetics, ecologic aesthetics is a new aesthetics theory integrated with the elements of ecology. It's as perfect combination of traditional aesthetics and modern ones. The harmony between mind and nature and the organic combination of nature's aesthetics and cultural ones are emphasized in ecologic aesthetics. The connotation of ecologic design has developed from self-sufficiency, energy saving to ecologic balance and sustainable development. Taking Harbin International Conference Exhibition and Sports Center as an example, almost all the architects from all over the world entering the bid have adopted ecologic aesthetics in their designs. On one hand, they follow the ecologic laws and aesthetic principles to meet the demand in ecology in their designs; on the other hand, they fully play their creative talent and apply the technological fruits to the process and refine the nature so as to realize the integration of the artificial and the natural. In the design by AXS Satow Inc. from Japan and Architectural Design and Research Institute of TsingHua University, they raise a partial-control air-conditioner system which is practical from the comparatively vaster activity space for people. In this system, low-speed but larger capacity of blowing is set in summer to form a cycling of air in the lower level so as to form different layers of air according to the temperature and to avoid the unnecessary connection of air; in winter the system can cycle the accumulated heat on the top of room downward in the public hall to raise the heating efficiency in the lower layers of the rooms. The computer controlled ventilation system is automatically turned on and off according to the outside temperature, humidity, wind force and snowfall or rainfall etc all the time so as to save a large amount of energy. In this design, large deals of automatic ventilation have been realized to suit the residents in Harbin where great temperature gap exists from the day to night. At night, the cold air is used for the inner ventilation and air cycling in the day. In the day the natural ventilation caused by the sunshine is effectively used by the air-conditioner system to raise the working efficiency. Other details about the ecological design can be found such as the replacement of traditional design to the parks by the "among trees park" in which the parks among the buildings like in the forest faces the main needs. It's quite different from the traditional ones in which free land is used for a park.

2. Exhibition at green room

Because of the large scale of construction and complicated functions for the conference and exhibition buildings, natural landscape and green materials are always recommended and created by architects to construct a pleasant ecologic environment in which "green room" is fairly important. With increasingly ecologic awareness, people think it's a good way to make dialogue between man and nature by borrowing the natural landscape outside and using it in the inner room so that people can enjoy the charm of nature. The application of bionics and green material can meet man's psychological demand to return to nature. In the design by Moorhen Architectural Design Co. LTD from France and H-T Architecture Design & Research Institute, the winter garden reflects the ecologic connotation in green design.

All in all, the green design will definitely become the main trend in which people exploit and militarily freeform the nature, comply with and protect the ecological balance to obtain the best relation between man and nature and to create pleasant room for people to live and develop.

(III) Organic restructuring of technological connotation.

The development of conference and exhibition buildings reflects the importance attached by people to high technology. Some people misunderstand that high-tech means high consumption of energy and high cost, ignoring the ecologic environment, such as HuiFeng bank in Hong Kong and Peripiton in Paris. In fact, the high-tech sect has developed its architecture from one simply emphasizing the functional flexibility and application of high-tech to one emphasizing environment, culture and ecologic balance.

国建筑文化、提高建筑创作水平的重要途径。随着国际间合作的日益广泛，许多国际知名的建筑师参与到中国的建筑创作中，必然会促进文化与文化之间的交融。

（2）文化的叠合、融合、整合

在建筑创作中如何实现异质建筑文化的交融呢？我们可以依据异质文化间相互渗透的程度总结出如下涵化机制：叠合、融合、整合，它们之间存在着层次上的递进关系。叠合机制是将两种或多种异质文化在建筑创作中并置、交叉而分别表征，这是最粗浅的涵化阶段，如简单的符号移植、形式抄袭等等；融合则是将异质文化融入建筑文化母本中，使文化母本通过渗透吸收部分异质基因而改变性征，如古为今用，洋为中用等手法；整合则是将异质建筑文化的基因最大限度地交融、吸收达到变异性重构，从而在整体上形成新的统一文化体；强调更广范围和更大深度的整合，可使新生的建筑文化体在更深的社会文化体系内达到充分的和谐，使其根基牢固地扎在社会文化系统的土壤里，而且可以为社会文化的整体发展提供相应的动力支持和保证。事实上，在异质建筑文化的涵化过程中，可能几种机制共同作用形成建筑文化发展丰富而动态的图景。

（二）生态内涵的有机重构

20 世纪末，人类品尝了自己所制造的“无节制发展”的苦果，面对全球环境、生态与能源危机，人类终于意识到走可持续发展道路才是最佳选择。因此，当建筑师面对创作时，他们综合当代建筑学和生态学方面的成果，积极建立绿色建筑的理论体系，尝试从生态学的角度来指导与优化设计，赋予了建筑以生态学的文化内涵，从而提高了整体环境效益，使人工与生态环境有机共生。

1. 追求生态美学

生态美学是以传统美学理论为基础，并与现代美学理论相结合，同时注入生态学要素的一种崭新的美学观点。生态美学往往更加注重人与自然的和谐统一，并力求达到自然美与人文美的有机结合。生态设计内涵已经从最初的自给自足、节能保护的自维持概念，拓展到发展生态平衡，可持续发展的宏观角度。以哈尔滨国际会议展览体育中心国际竞标方案为例，参加投标的各国建筑师无一例外地在设计中追求生态美学，一方面遵循生态规律和美的自然法则，使设计尽最大限度符合生态系统要求；另一方面都充分发挥创造才能，运用科技成果加工改造自然，创造出了人工美的环境，达到人工环境与自然环境的融合。由日本株式会社佐藤综合设计及清华大学建筑设计研究院设计的方案，对应大空间的特点，提出了人的活动区域局部控制的空调系统，即在夏季采用低速大容量的吹风方式在空间低层形成局部循环，将空间室内温度分布形成层化结构，减少不必要的空气对流；在冬季，将空间顶部积蓄的热量向下循环，提高底层部分的暖房效率。中央共通厅部分采用计算机控制可以随时感知外部环境中的温度、湿度、风力、雨雪量等情况，自动开闭玻璃幕自然换气系统，大大节省了能源消耗。该方案充分利用哈尔滨日夜巨大的温差变化，尽量实现大空间的自然换气。在夜间，利用屋外冷气形成内部换气，并且用于白天的空气循环中，白天的空调系统有效利用太阳日晒形成的自然对流力，提高了空调系统的工作效率。建筑师在设计中的每一个细节中均体现了对生态设计的追求，比如该方案建筑用地内部面向主要道路的停车场采用“树间停车场”的设计概念，取代了简单地以空地作为停车场的习惯作法，营造出森林般的环镜气氛。

2. 展示绿色空间

会展建筑由于规模巨大，功能复杂，在设计中，通过引入或再现自然景观来创造宜人的生态环境——“绿色空间”就显得格外重要。建筑师通常采用引入自然景观，内外空间流通，利用仿生原理，使用绿色材料等多种手段来达到展示绿色空间的目的。在许多大型公共空间中引入自然景观的手法较为普遍，随着人们生态意识的增强，将外部的自然景观借到室内，使人在室内也能享有大自然的神韵与意趣，成为人与自然一种极佳的对话方式。仿生原理及绿色材料的应用则满足了现代社会中人们回归大自然的的心理需求。在法国米多芬建筑师事务所和哈尔滨工业大学建筑设计研究院设计的哈尔滨会展体育中心方案中，冬季花园的引入，便极佳地诠释了绿色设计的生态内涵。

总之，在建筑设计中，“绿色设计”必将成为一种主流思想与方法，它对于现有条件下，争取对自然生态的最优关系，利用并有节制的改造自然，顺应并保护生态平衡，寻求创造宜于人类生存发展的环境具有重要意义，是重构生态内涵的最佳途径与方法。

（三）科技内涵的有机重构

1. Carry forward times spirit and keep rational of the high-tech.

Different from the architects of high-tech sect in the early staff who blindly show off the industrial achievement, the new generation of high-tech sect devote themselves to applying the latest achievement of modern technology to the operation of more ideal environment and sustainable development. The point of the restructuring technological connotation is to abandon the design applying too much high-tech despite of position, location and context, which always cause some extreme conflicts. What we pursue about the technological connotation is to carry forward technology and new material. Taking the design of Harbin international conference exhibition and sports center by Wladimir Mitrofanoff Architects from France and Architectural Design & Research institute of HIT as an example once again we adopt some modern material, such as threads-stuffed glass, pvc panels, wood, steel products, copper panels that have limitless potential in construction. Solar energy absorbers and transformers set above the glass room make it possible for the project to obtain more ecologic efficiency. A great number of technological methods such as support stilts, hanging and pulling, orbit moving, etc. are applied to reflect the flexible and changeable era.

2. Sustaining the location characteristics and respect the cultural tradition

It is one of the most important aspects for the construction of technological connotation to sustain the location characteristics and respect the cultural tradition. The architects of the hi-tech sect apply hi-tech not only for art expression but successfully resolve the problems in functions and technology. Renzo Piano, one of the famous Italian architects, attaches importance to the location characteristics and the combination of traditional technology, culture and environment. A lot of his works reflect the success of the involvement of culture, history and context, etc. And his opinions about technology, structure, frame and detail we can see that in his Tjibaou cultural conference and exhibition buildings.

II. Development trends of conference and exhibition buildings

(I) Conference and exhibition buildings

The unique and impressive construction of conference and exhibition buildings presents the characteristics with fast technological development and the special connotation of architectural culture. Generally speaking, the development of conference and exhibition buildings experiments three phases (see the attached chart 1 below). Developing the exhibition or conference centers with a single function, the modern international conference and exhibition centers have become the multi-functional place where large-scale exhibitions, international conferences and sports games, and information circulations can be held. They're designed according to the different planning demand for the city's development and combination with sports, industry and information industry so as to emphasize the cultural connotation, ecologic connotation and technological connotation. Whether the design will be a success or not mostly depends on the location, scale, streamline and construction. We will discuss the separately in the following passages.

Chart 1

Development Stage	Architectural Style	Architectural Function	Representative Examples
1 st Stage	Exhibition Center Conference Center	Single function for exhibition Single function for conference	HongQiao Exhibition Center in Shanghai, China International Peace Conference Center in Yokohama Japan
2 nd Stage	Conference & Exhibition Center	Combined function for exhibitions and conferences (one of the two is the main function)	The glass lobby of Leipzig New C&E Center, Germany Attenborough International C&E Center, England Linz International C&E Center, Austria
3 rd Stage	Conference & Exhibition Sports Center Conference & Exhibition Information Center	Multifunctional for Exhibitions, Conferences, Sports Events and Information Sessions	Harbin International C&E Center, China (planned to be built) Tokyo International Culture Center, Japan

1. Location:

Generally, the investment scale and the local population density should be taken into consideration when we choose the location for a large scale conference and exhibition center, because of vast space occupied, short average yearly using period, large flows of visitors and goods during the exhibition and great impact on the urban transportation and landscape. The best choice of the location and scale should comply with the demand of city planning, such as the center of suburb of cities because of its convenient transportation, good communication with airport, railway and wharf, good combination with rivers, lakes, green grass and garden, and convenient

会展建筑随时代的跃迁，越来越体现出对高科技的重视。提起高技派，人们自然会联想起香港汇丰银行、巴黎蓬皮杜中心等，并认为高技就代表了高能耗、高造价、不重视生态环境。事实上，高技派建筑正在悄悄地变化，由单纯地重视建筑功能的灵活性和显示高科技艺术逐步转向重视环境、文化传统与生态平衡，高技派建筑师正在重构科技内涵。

1. 弘扬时代精神，理性对待“高技”

如果说早期“高技派”作品还是在盲目炫耀工业成就的话，作为新一代的“高技派”建筑师则致力于利用现代工艺技术中的新成就来创造更加理想的环境，走上可持续发展的道路。重构科技内涵的重要一点就是摒弃那种不顾位置、场所和文脉，运用大量高技手段与环境产生极端的冲突，我们追求的科技内涵是更多地对新技术、新材料的潜力进行深入探索，弘扬时代精神，理性对待“高技”。如法国米多芬建筑师事务所和哈尔滨工业大学建筑设计研究院设计的哈尔滨会展体育中心方案中，在材料选择上大胆选用了夹丝玻璃、PVC板、木材、钢材、铜板等富于表现力的现代材料。在结构支撑、构造处理等方面均极力表现了现代技术的无限潜能。同时在玻璃屋架上方便当地布置了太阳能吸收转换器，使项目运作具有了更大的生态效益。大量使用架空支撑、悬挂拉结、轨道移动等技术手段营造出一个富时代精神的灵活变幻的自由体。

2. 延续场所特性，尊重文化传统

注重延续建筑的场所精神并与当代的文化传统相结合是重构科技内涵的重要方面。高技派建筑与传统文化结合具有其鲜明的特色，他们对高科技的运用不仅仅是为了表达艺术形象，而且是综合地解决功能与工程技术问题，因而更具生命力。意大利著名建筑师皮亚诺（Renzo Piano）重视场所精神，并重视将传统科技与传统文化和环境相结合，因而对技术、结构、构造、节点的态度，因文化、历史、文脉等因素的介入而获得了巨大的成功，其许多作品均反映出很强的场所特性，他设计的奇芭欧文化中心（Tjibaou Cultrual Center）就是地区文化、历史环境、生态技术的完美结合。

二、会展建筑发展趋势

（一）会展建筑

会展建筑往往以其独特而富于表现力的造型，体现着科技发展的时代特征及建筑文化的特定内涵。总体来说，会展建筑的发展经历三个阶段（请见表1），现代化的新型国际会议展览中心是由最初功能较为单一的展览馆或会议中心发展而来，新型的国际会议展览中心往往根据各自城市的不同发展规划及需求，结合体育产业及信息产业形成能举办大型展览、国际会议、国际性体育比赛及信息流通的综合性场所，建筑应重点突出文化内涵，生态内涵及科技内涵。会展建筑设计中，选址、规模、流线、结构设计往往关系到设计的成败，下面就各项进行概要论述。

表1

发展阶段	建筑类型	建筑功能	代表建筑举例
第一阶段	展览馆（中心） 会议中心	单一展览功能 单一会议功能	中国·上海虹桥展览中心 日本·横滨国际和平会议中心
第二阶段	会展中心	展览功能与会议功能相结合，以其一为主。	德国·莱比锡新会展中心玻璃大厅 英国·爱丁堡国际会议展览中心 奥地利·林茨会议展览中心
第三阶段	会议展览体育中心 会议展览信息中心	展览功能，会议功能，体育中心，信息中心 多种功能的综合体。	中国·哈尔滨国际会议展览体育中心（拟建） 日本·东京国际信息文化中心

1. 选址

大型会展中心选址应根据投资规模，其所在地区人员密度等综合考虑。由于会展中心占地面积巨大，年平均使用时间短，使用人流大，展览期间有大量货物出入展场，对城市交通和城市景观有较大影响，选址应注意以下几方面：位置、规模应符合城市规划要求；应位于城市社会活动中心地区或城市近郊；交通便捷且与机场、铁路、码头有良好的联系；宜与江湖水

public service equipment.

2. Scale:

It depends on the local economic power and the scale of the exhibition. It's not good for the long-term economic development to blindly enlarge or shrink the scale of conference and exhibition centers. At present, the square section of large conference and exhibition centers in China is controlled in the range from 35 to 100 thousand m² in which national or international exhibitions can be held. See chart 2 for the relation of the exhibition scale and architectural square and see chart 3 for the functions and characteristics of conference and exhibition buildings of different scales.

Chart 2

Category	Architectural area of exhibition section	Functional construction of rooms and its description
International Trade Fair	100000 ~ 300000m ²	Exhibition halls (several), square, department store, restaurant, entertainment equipment, etc.
National, International exhibition center	35000 ~ 100000m ²	Exhibition hall, conference center generally attached theatre, supermarket, restaurant.
Municipal and local exhibition center	10000 ~ 35000m ²	ball games hall, etc.
	2000 ~ 10000m ²	Exhibition hall, conference room, etc. Exhibition hall can be used for political, economic and cultural fairs.

Chart 3

Category	Scale	Function
A	35000 ~ 150000m ² in area For exception above 200000m ² in area Building groups as the majority	The main function is goods exhibition and goods trade usually attached to market, conference center, hotel, restaurant, theatre, and other cultural and entertainment places; the exhibition area occupies 1/3 of the whole architectural area
B	8000 ~ 25000m ² in area single building or the majority	It is basically used for goods exhibition and trade. Restaurant, small shops, conference hall can be attached; The exhibition area occupies 2/3 ~ 1/3 of the whole architectural area
C	Below 8000m ² in area Single building or part of that	Single function; mostly used for goods exhibition and sell. the general intensity of customer is higher than the one in category A and B, so the equipment for customers to rest is very necessary; the exhibition area occupies a large proportion of the whole architectural area

3. Streamline

Smooth and easy transportation, including the flows of visitors, vehicles, goods during large-scale conferences and exhibitions, must be guaranteed because of its large scale and complicated function. Transportation facilities often depend on a perfect plane arrangement. Large exhibition halls can be divided or either integrated so that it can be flexibly arranged according to the different scales of exhibitions. Generally rectangle exhibition halls are the most commonly seen because it can obtain maximum arrangement, convenient passage and less occupying areas. No matter what shapes, i.e. square, circular, polygon or irregular shape, all of them have their own advantages and disadvantages.

泊、公园绿地结合；充分利用周围现有的公共服务设施。一般说来，选址多位于大城市的中心区边缘或近效区。

2. 规模

大型会展中心的规模一般由本地区的经济实力和展览会的大小所决定，并应适当考虑远期发展目标，盲目扩大或缩小会展中心规模将不利于城市经济发展。国内目前的大型会展中心展览区面积一般控制在 3.5~10 万 m² 之间，这种规模可举办国家级或国际性大型展览，展览的规模与建筑面积的关系可参见表 2，不同规模的会展建筑功能特点可参见表 3。

表 2（表格来源：《建筑设计资料集·4》 138 页）

分 类	展览区建筑面积	功能空间构成及说明
国际博览会	100000~300000m ²	展览馆（多处）、广场、商店、餐饮设施、游乐设施等
国家级、国际性展览馆	35000~100000 m ²	展览厅、会议中心。一般可附有剧场、商场、饭店、球类馆等公众设施
省级展览馆	10000~35000m ²	展览厅、会议室等
地市级展览馆	2000~10000 m ²	展览厅、会议室等。展厅应可同时用于地市级政治、经济、文化集会

表 3（表格来源：《建筑设计资料集·4》 139 页）

分 类	规 模	功 能
A 类	面积在35000~150000 m ² 个别馆可达200000 m ² 以上 以建筑群为多	以商品展览和商品贸易为主，设施齐全，功能复杂。 常附设交易市场，会议中心、旅馆、餐饮馆、剧场以及文娱活动场所；展览面积比例在总建筑面积的 1/3 以下
B 类	面积在8000~25000 m ² 以单幢建筑为多	基本上用作商品展览和商品贸易。可以附设餐厅或小卖部、会议厅 展览面积比例在总建筑面积的 2/3~1/3 中间
C 类	面积在8000 m ² 以下 或是单幢建筑，或是单幢建筑中的局部	功能单一，多数用作商品展销。一般顾客密度高于 A 和 B 类， 大厅内须考虑必要的顾客休息设施； 展览面积比例很高

3. 流线

大型会展中心由于规模巨大、功能复杂，因此必须保证交通进出顺畅，特别是要处理好大型会展活动期间人流、车流、货流的集散，会议、展览及住宿的交通便捷。交通流线的组织往往依赖于一个完美的平面布局，尤其是大型展厅的布局，展厅布局宜可分可合，灵活性大一些，这样针对不同规模的展览可灵活布置。一般说来，长方形的展厅最常见，能获得展位布置的最大值，且走道通畅便捷，占用面积少。正方形、圆形、多边形、异形的展厅则各有优缺点。

4. Structure

The art of modern architectural models is more and more presented by structure and whole space, not simply by the technology. We should attach more importance to the structure because it has great things with the construction of architectural image and its symbolizing characteristic. Taking the design of Harbin Conference Exhibition and Sports Center by GMP Architects as an example, high-tech structure is applied to the dome of the multi-functional hall with a span of 150 meters; film structure is applied to the exhibition hall and stadium. The above design reflects the development and achievement of modern architecture incisively and vividly. The unique structure becomes the symbol of the city. All in all, in the design for conference and exhibition buildings, apart from the special architecture, fire-prevention, transportation, equipment and structure, etc. also has its irreplaceable importance. We should regard them equally so as to make the design perfect.

(II) Development trends

In the 21st century, conference and exhibition buildings integrate multiple functions. It doesn't mean the simple adding of functions of different building groups, but the organic integration in which different functions are comprehensively considered. The followings are the development trends of conference and exhibition buildings we conclude in the 21st century.

1. High art

The highest level of architecture is art. A modern and large-scale international conference and exhibition centers should be a perfect art work, but not an ordinary one. So one of the development trends is to apply oriental philosophy and aesthetics to the design of conference and exhibition buildings in China to create top-quality works with high art on the basis of communication between traditional culture and modern one, international culture and regional one. In the design for Harbin Conference Exhibition and Sports Center by Herzog Obermeyer Design Union from German, strong sense of symbolism and rhyme and its unique characteristics present the high art of both building groups and single building.

2. High ecology

As a development strategy, sustainable development has become the fundamental principle in architectural design. In the design of conference and exhibition buildings, efficiency, energy saving and green architectural culture is advocated to establish a harmony between artificial environment and a natural one. Such high ecology and ecologic ethics will become another development trend.

3. High intelligence

With the fast technologic development, man has higher and higher demands about environmental optimization. People hope that the environment can be automatically adjusted, managed and controlled. Intelligent design will make a fast and efficient response to the multiple demands from users. Undoubtedly, intelligent conference and exhibition buildings will be one of development trends.

4. High emotion

With the flourishing of information, policy-making, etc., the principle man is essential will become more and more important in the design of conference and exhibition buildings. The mutual action between men, man and nature, man and society in high levels will contribute the high emotion to become another development trend for the design of conference and exhibition center buildings.

5. High industrialization

The reform and opening up transition policy in China has produced profound impact on all trades. So the socialization and industrialization of sports trade and conference and exhibition trade is an inevitable trend.

All in all, high art, high ecology, high intelligence, high emotion and high industrialization reflect the cultural connotation, ecologic connotation, and technological connotation in a high level, having great significance for the design theory of conference and exhibition buildings, and will become the development trend of conference and exhibition buildings.

4. 结构

现代建筑造型的艺术性越来越需求于结构形式整体空间性的体现，现代化的大型会展中心的结构设计已不单纯是纯技术性问题，它的成功与否直接关系到建筑形象的塑造以及建筑的标志性特点，应引起足够的重视，如德国 GMP 建筑师事务所设计的哈尔滨会展体育中心方案中跨度为 150 米的多功能馆的穹顶采用了高技结构，展览大厅和体育场顶则采用薄膜结构，通过这些具有时代精神的结构设计，将现代建筑的发展结晶体现得淋漓尽致，并以独树一帜的造型，成为城市的地标。

总之，会展建筑设计要求相当专业化，除建筑专业外，消防、交通、设备、结构等均有其特殊性，其设计理论需要全体同仁共同完善。

（二）发展趋势

21 世纪的会展建筑多种功能相互组合，各不同建筑群体不仅仅只是功能上的简单叠加，而是综合考虑、相互兼顾的有机整体，因此展望 21 世纪，会展建筑将呈现出如下发展趋势。

1. 高艺术化

建筑的最高层次是它的艺术性，现代化大型国际会展中心应该是一件完美的艺术作品而不是一般的产品，因此在我国会展建筑设计中，运用东方哲学与美学观念，在传统与现代、国际性与地域性多种文化交流的基础上，创造出高艺术化的精品是未来发展趋势之一。德国 Herzog/Obermeyer 设计联合体设计的哈尔滨会展体育中心方案，群体和单体均具有强烈的标志性，唯一性和韵律感，体现出极高的艺术品味。

2. 高生态化

“可持续发展”作为一种发展策略，已经成为建筑创作的基本原则。在会展建筑中大力提倡发展高效、节能，无污染的绿色建筑文化，树立良好的人造环境与自然生存环境协调发展的高生态化的生态伦理观念，是未来发展的趋势之一。

3. 高智能化

随着科技日新月异发展，人们对环境优化条件的要求越来越高，希望环境能随着需要自动加以调节、管理与控制。智能化的设计能够以最有效地方式迅速响应用户的各种要求，这无疑将使会展建筑高智能化成为发展趋势之一。

4. 高情感化

信息社会中，随着信息、决策科学等软科学的蓬勃兴起，对高情感的迫切要求促使会展建筑更加注重“以人为本”的原则，人与人之间、人与自然之间、人与社会之间深层互动将导致会展建筑的高情感化成为发展趋势之一。

5. 高产业化

我国的改革开放和经济转轨对各行各业都产生了意义深远的影响。体育事业早已社会化与产业化，同样会展事业在市场经济条件下与体育事业一样，走向社会化与产业化是寻求自身生存与发展的必然趋势。

总之，展望 21 世纪，高艺术化、高生态化、高智能化、高情感化与高产业化必将成为会展建筑的发展趋势，它们体现着更深层次的文化内涵、生态内涵和科技内涵，同样也将对会展建筑设计理论的形成具有重要的现实意义。

Harbin Conference Exhibition and Sports Center

Design summary for international architectural competition

Harbin is an important center in North-East China, politically, economically, culturally and also as a transportation hub. As a national level famous city culturally and historically and is also the provincial capital of Heilongjiang. The provincial government has decided to construct a large modern international conference exhibition and sports center to perfect the function of the city, promote external opening and develop the market economy. It is going to be a great juncture for Harbin to construct an international conference exhibition and sports center, and it is going to provide superior conditions to get international connections with various fields.

1. General introduction of the project.

1.1 Name of the project: Harbin conference exhibition and sports center

1.2 Site of the project.

Harbin conference exhibition and sports center will be located in the North-East economic and technological development district of NanGang District. It is facing Changjiang Road in the South, Nanzh Road in the East, and Yellow River Park in the North. In the West across Hong Qi Road is Long Market shopping center. The location has convenient transportation and fairly complete fundamental facilities. The total land area is approximately 45 hectares. (Including Ta Shan Road land area in the middle of the block, excluding Yellow River Park land area)

1.3 Content of construction

Harbin construction content includes two parts one being Conference and Exhibition Center and the other being Sports Center. The exhibition center part includes exhibit halls which are designed according to international standards: 1500 seats, 800 seats and 500 seats, conference halls, 3-star hotel, complex building and other associated products. The sports center includes a gymnastics complex, training house, a 35 000 seat stadium and other supporting facilities.

1.4 Goal of construction

It must be designed from high starting points and high standards. It will be a hallmark of Harbin in the 21st century.

1.5 Design Requirements

- Architectural layout of the design shall be rational. In organic coordination with the surrounding urban landscape and smooth traffic requirements
- Design shall fully meet the requirements of all functions in connection with each part of the building and supporting services, and shall be advantageous to the operation.
- The traffic circulation in the design shall be smooth and convenient, with a good solution to the flows of people and vehicles at each part of the building.
- The external environment in the design shall be open and elegant. The design concept shall adapt to local climate and display the local culture.
- Adequate attention shall be paid to the demand for construction in different phases and the requirement for future development.
- The selection of structure shall be rational and be advantageous to work on and save investment.

2. Entering a Design Bid

2.1 Design Competition Methods

The architectural designs of the Harbin center will be collected in the way of an invited design competition.

2.2 Schedule arrangement

Beijing time, same as below

2.2.1 Registration time of design competition: May 15th, 2001

2.2.2 Answering Questions time:

Questions shall be answered in unified and written form within two weeks after the registration meeting.

2.2.3 Submission time for design entries:

July 28th, 2001

2.2.4 Evaluation time:

July 30th and 31st, 2001

2.3 Requirements for design entry

2.3.1 Requirements for design explanation.

- The explanation of architectural overall layout design
- The explanation of individual buildings design
- The explanation of structure selection design

哈尔滨会议展览体育中心建筑设计方案国际竞标综述

哈尔滨市是中国东北部重要的政治、经济、文化中心及交通枢纽，作为国家级历史文化名城、黑龙江省省会，为完善中心城市的功能，促进对外开放，发展市场经济，省市政府决定兴建现代化的大型国际会展体育中心。哈尔滨国际会议展览体育中心的兴建必将成为一个良好的契机，为哈市提供更优越的条件去实现与国际各领域的接轨。

一、项目概述

1.1 项目名称：哈尔滨会议展览体育中心

1.2 项目位置

哈尔滨会展体育中心选址在哈尔滨市南岗区经济技术开发区东北部，南临长江路，东临南直路，北侧有黄河公园（规划），西部隔红旗大街与隆马特购物中心相对，交通便利，基础设施较完善。总用地面积约 45 公顷（包括街区中部泰山路用地，不包括黄河公园用地）。

1.3 建设内容

哈尔滨会展体育中心建筑内容主要包括会议展览中心及体育中心两部分。会展部分主要包括按 2000 个国际标准展位设计的展览厅；1500 座、800 座、500 座会议厅；三星级宾馆标准的综合楼及其它配套工程。体育中心主要包括综合体育馆一座，综合训练馆一座，35000 座体育场一座及其它配套设施。

1.4 建设目标

哈尔滨会展体育中心设计要求高起点，高标准，成为 21 世纪哈尔滨标志性建筑之一。

1.5 设计要求

- 建筑规划布局合理，应充分考虑周围环境、道路交通通畅及城市景观要求。
- 各部分建筑充分满足功能使用要求，有利于经营管理。
- 交通便捷、畅通，能很好的解决各部分的人流、车流、停车、运输等方面的关系。
- 具有开阔、优美的室外空间环境，具有适应地方气候和展示地方文化的建筑构思和立意。
- 考虑建筑分期建设和未来发展的需要。
- 结构选型合理，有利于施工及节省投资。

二、方案招标

2.1 竞标方式

哈尔滨会议展览体育中心建筑设计方案，采用邀请竞标方式征集。

2.2 日程安排

以下时间均为北京时间

2.2.1 发标时间

2001 年 5 月 15 日

2.2.2 答疑时间

在发标后二周内统一进行书面答疑

2.2.3 收标时间

2001 年 7 月 28 日

2.2.4 评标时间

2001 年 7 月 30~31 日

2.3 成果要求

2.3.1 设计说明报告书要求

- 建筑总体布局方案说明
- 单体建筑方案构思说明
- 结构选型方案说明