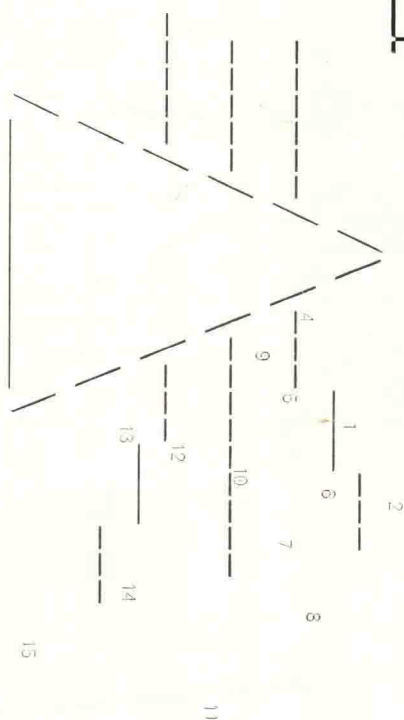


设计批判与

DESIGNING

IMPACT!

Approaches to Applied Research



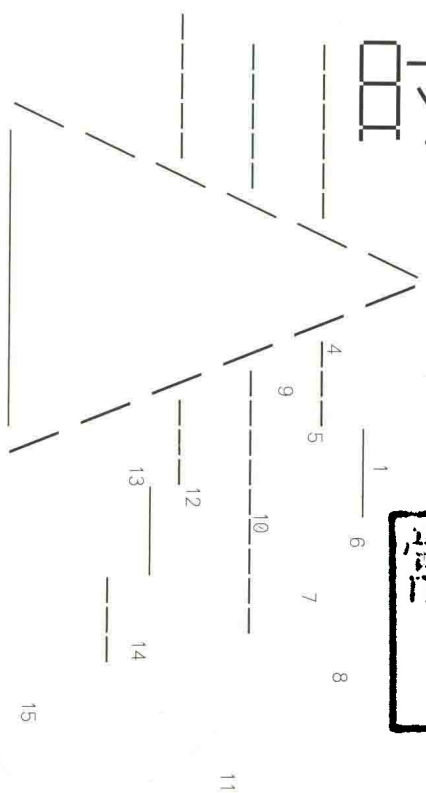
外文出版社
FOREIGN LANGUAGES PRESS

设计进行时

DESIGNING

IMPACT!

Approaches to Applied Research



常州大学图书馆
藏书章

Text : China Central Academy OF Fine Arts
and Sheffield Hallam University, Art and Design Research Centre

Editor: Wang Zhi

First Edition 2011

DESIGN IMPACT! Approaches to Applied Research

ISBN 978-7-119-06933-3

Copyright © 2011 Foreign Languages Press

Published by Foreign Languages Press

24 Baiwanzhuang Road, Beijing 100037, China

Home Page: <http://www.flp.com.cn>

Distributed by China International Book Trading Corporation

35 Chegongzhuang Xilu, Beijing 100044, China

P. O. Box 399, Beijing, China

Printed in the People's Republic of China

Copyright © 2011 publisher Foreign Languages Press

All rights reserved

No part of this publication may be reproduced, stored in a retrieval
system or transmitted in any form or by any means without the prior
permission of the publisher.

中央美术学院
China Central Academy of Fine Arts

中央美术学院
北京市朝阳区花家地南街 8 号
网址: www.cafa.edu.cn

China Central Academy of Fine Arts
NO.8 Huajiadi nanjie, Chaoyang District, Beijing China
www.cafa.edu.cn

 **Sheffield
Hallam University**

英国谢菲尔德哈勒姆大学艺术学院艺术与设计研究中心
英国谢菲尔德郡 S11 8UZ
网址: www.shu.ac.uk

Sheffield Hallam University
Art and Design Research Centre
Sheffield S11 8UZ
United Kingdom
www.shu.ac.uk

Content 5 目录

Preface 6 前言

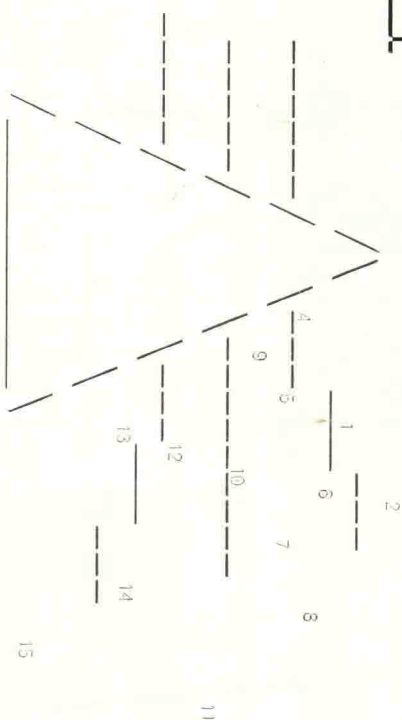
1_ Design of the medals for the Beijing 2008 Olympic Games	10	北京 2008 年奥运会奖牌设计	1
2_ Space Arts, Artistic Space Interior Design of Subway Stations for Beijing	16	空间艺术化, 艺术空间化 \ 北京奥运会地铁室内设计	2
3_ Beijing World Design Congress 2009 Image Design and Application	30	2009 北京世界设计大会形象设计以及应用	3
4_ Beijing 2008 Olympic Games Sports Icons and Indication System	36	北京 2008 年奥运会体育图标 \ 指示系统	4
5_ Tai Chi Master: An Immersive Tai Chi learning System	54	太极大师 \ 沉浸式的太极学习系统	5
6_ A Collaboration in Education by Tencent Research: Tencent Experience Center	60	腾讯研究院教育合作课题	6
7_ Job Hunter: A mobile Phone Service to Help Migrant Workers Find Employment Opportunities and Training	64	找工作 \ 帮助民工获取有效就业信息 \ 提升职业技能的应用程序及手机硬件设计	7
8_ "Innovation Experience" for Web Design Education: A Collaboration with Google	68	Google 创新网络体验设计	8
9_ Design for sitting: Behaviour Study and Form Design	74	为坐而设计	9
10_ Interpreting the 'pulse': Design of the Information Column in the Central area of Beijing Olympic Park	80	解读「脉动」北京奥林匹克公园中心区信息柱设计	10
11_ The Fable about the Body: Jewellery for the New Century	86	首饰研究课题简介	11
12_ 井-shaped Yi and 井-shaped Ku A Case Study on the Prospect of Chinese Traditional Costumes	90	井衣文袴 中国服饰可能性案例研究	12
13_ Research on Integration of Cloud Carving and Innovative Design	98	云雕与创新设计融合的研究	13
14_ The Olympic Arts Research Centre at China Central Academy of Fine Arts and the Universiade 2011 Shenzhen	106	深圳第 26 届世界大学生夏季运动会形象设计	14
15_ The Design Project of a New Visual Identity System for "People's Daily"	118	人民日报社形象识别系统设计	15
16_ Shooting Project: The 2009 "Icograda World Design Fair" Image Information Archive Project	124	2009「Icograda 世界设计大会」图片信息档案项目	16

设计批判与

DESIGNING

IMPACT!

Approaches to Applied Research

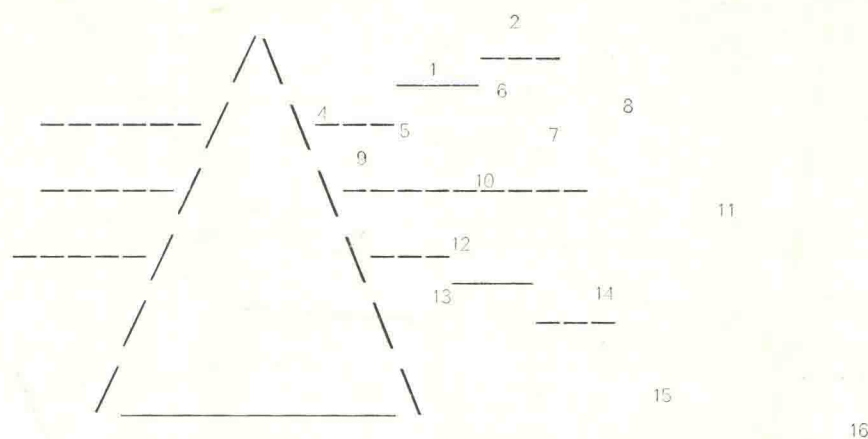


外文出版社
FOREIGN LANGUAGES PRESS

设计进行时 DESIGNING IMPACT!

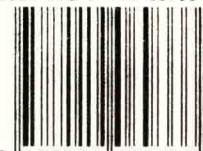
3

Approaches to Applied Research



外文出版社
FOREIGN LANGUAGES PRESS

ISBN 978-7-119-06933-3

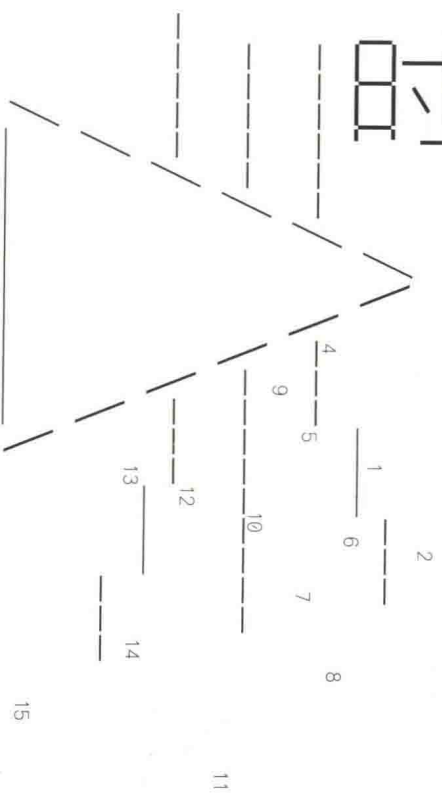


9 787119 069333 >

定价: 198.00 元

设计职业 DESIGNING IMPACT!

Approaches to Applied Research



Content 5 目录

Preface 6 前言

1_ Design of the medals for the Beijing 2008 Olympic Games	10	北京 2008 年奥运会奖牌设计	1
2_ Space Arts, Artistic Space Interior Design of Subway Stations for Beijing	16	空间艺术化, 艺术空间化 \ 北京奥运会地铁室内设计	2
3_ Beijing World Design Congress 2009 Image Design and Application	30	2009 北京世界设计大会形象设计以及应用	3
4_ Beijing 2008 Olympic Games Sports Icons and Indication System	36	北京 2008 年奥运会体育图标 \ 指示系统	4
5_ Tai Chi Master: An Immersive Tai Chi learning System	54	太极大师 \ 沉浸式的太极学习系统	5
6_ A Collaboration in Education by Tencent Research: Tencent Experience Center	60	腾讯研究院教育合作课题	6
7_ Job Hunter: A mobile Phone Service to Help Migrant Workers Find Employment Opportunities and Training	64	找工作 \ 帮助民工获取有效就业信息 \ 提升职业技能的应用程序及手机硬件设计	7
8_ "Innovation Experience" for Web Design Education: A Collaboration with Google	68	Google 创新网络体验设计	8
9_ Design for sitting: Behaviour Study and Form Design	74	为坐而设计	9
10_ Interpreting the 'pulse': Design of the Information Column in the Central area of Beijing Olympic Park	80	解读「脉动」北京奥林匹克公园中心区信息柱设计	10
11_ The Fable about the Body: Jewellery for the New Century	86	首饰研究课题简介	11
12_ 井-shaped Yi and 井-shaped Ku A Case Study on the Prospect of Chinese Traditional Costumes	90	井衣文袴 中国服饰可能性案例研究	12
13_ Research on Integration of Cloud Carving and Innovative Design	98	云雕与创新设计融合的研究	13
14_ The Olympic Arts Research Centre at China Central Academy of Fine Arts and the Universiade 2011 Shenzhen	106	深圳第 26 届世界大学生夏季运动会形象设计	14
15_ The Design Project of a New Visual Identity System for "People's Daily"	118	人民日报社形象识别系统设计	15
16_ Shooting Project: The 2009 "Icograda World Design Fair" Image Information Archive Project	124	2009「Icograda 世界设计大会」图片信息档案项目	16

Foreword

As the highest institution of national art education, the only art academy of higher education directly under the administration of the Education Ministry of the People's Republic of China, the Central Academy of Fine Arts (CAFA) has devoted major efforts to developing design education in recent years. CAFA has nurtured and attracted a large number of pre-eminent artists nationally and internationally, and has established a synchronized teaching programme and curriculum with the leading art design institutions across the world. The teaching facilities have greatly improved, and we have attracted the best students in China. Last year, Business Week listed us in the top thirty art and design institutions in the world.

The School of Design currently delivers eight subjects: visual communication, digital media, photography, jewellery design, fashion design, product design, furniture design and transportation design. The school has more than 800 students, 15% of which are overseas students. In addition to Doctoral, Masters and Bachelor students, there are also many visiting scholars from other institutions.

CAFA has a tradition of providing creative services for China, and especially for Beijing. In addition to teaching and education we have also undertaken a large number of national and local design projects, including the identity and scene design for the Beijing Olympics, subway stations and the design for China's pavilion for the World Expo.

CAFA has also taken responsibility for promoting design in China. In 2009, CAFA, Beijing Industrial Design Center, Gehua Group and the National Centre for the Performing Arts jointly organised

the World Design Congress. During the congress, designers around the world gathered in Beijing and 24 design exhibitions were held. A large number of Beijing citizens involved in design activities related to the congress played a significant role for the promotion of design.

Creativity is the life and soul of design and it is our mission to develop students' creativity and originality. CAFA has a strong artistic heritage and a rich artistic atmosphere for students to develop their creativity and release their imagination. China will indeed transform from 'made in China' to 'designed and created in China', if a large number of creative and unique designers can be fostered.

Professor Wang Min
Dean of School of design, Central Academy of Fine Arts



前言

作为中国艺术教育的最高学府，教育部直属唯一美术学院，中央美术学院近年来大力发展设计教育，中央美术学院设计学院培养吸纳了国内外大量的人材，建立了与国际一流设计学院同步的教学大纲与课程，教学条件有了很大改善，同时我们吸引了中国最好的学生，我们的学生可以说是百里挑一。去年美国商业周刊将我们列入世界最好三十所设计学院之中。

中央美术学院设计学院目前有八个专业：视觉传达，数码媒体，摄影，首饰设计，时装设计，产品设计，家具设计，交通工具设计。设计学院在校学生800余人，其中15%为留学生。在校学生除了攻读博士、硕士、学士的学生之外，还有来自其他院校的访问进修学者。

中央美术学院历来有为国家，为北京市提供创意服务的传统。我们在教学育人的同时承担了大量国家与北京的设计项目，如北京奥运会的形象与景观，地铁站，世博会中国馆设计，等等。

学校也承担着在中国进行设计推广的任务。2009年中央美院与北京工业设计促进中心、歌华集团、国家大剧院一起举办了世界设计大会，世界各国设计师云集北京，24场设计展，大量北京市民参与了大会相关设计活动，为设计推广起了很大作用。

创造是设计的生命，创意是设计的灵魂，开拓学生的创造力，原创力是我们的使命！中央美院有深厚的艺术积淀，有浓郁的艺术氛围，适合学生在这里开启他们的创造力，释放他们身上的想象力。培养出大量的有创造力的、有个性的设计师，中国就会真正做到由中国制造到中国设计，中国创造。

Foreword

The process of completing the book "Designing Impact! Approaches to Applied Research" has been a very pleasant one.

"Process" is the transformation and expansion of a series of intermediate states containing the "initial state" and the "final state". And the way to change the "state" is to complete the energy exchange between the external world and the system of 'states', or to make the system of 'states' "do work" on the external world, or vice versa.

And we – the design teams from the School of Design of the Central Academy of Fine Arts (CAFA) and Art and Design Research Centre (ADRC) at Sheffield Institute of Arts, Sheffield Hallam University (SHU) seemed to have used all these ways in the processes from planning to completing this book.

In the initial state, there was a lack of understanding between us. Steven Bort spared no effort to visit us several times, giving lectures to the students of CAFA and young Chinese designers and having in-depth talks with the deans and professors of the School of Design. Especially in the hot summer of 2009, two professors from the Art and Design Research Centre and the Materials Engineering Research Institute of Sheffield Hallam University braved the hot summer sun busy travelling in south China to deliver lectures to the enterprises of the southern manufacturing base in China and their designers. Not only the contents of their lectures brought a wealth of information, their persistence and preciseness to disseminate true knowledge also allowed us to have a better understanding of the 'process' of design.

The professors from the Sheffield Institute of Arts (SIA) should have also obtained a better understanding of Chinese design and CAFA gradually through the process. Today's China is in a period of rapid growth of modern design, while the School of Design of the Central Academy of Fine Arts has no doubt been in the forefront of this strong growth. The professors of SIA approached the forefront of China's manufacturing industry and industrial design through CAFA. Through the exchanges they have also understood that Chinese design needs to fill the deficiency of knowledge and experience in an efficient way, especially in the value orientation of methods of design. And the best way to improve is to place our own work into a situation of an international dialogue in order to examine these aspects. The result of the above varieties of 'energy conversion' and 'doing work' is the cooperation of speeding up the completion

of this book. The pleasant cooperation and exchanges between professors of the two universities secured the opportunity of the ultimate birth of this book. The design teams of both Chinese and English universities equally brought more than a dozen of their own designs for 'dialogues'. This is probably the first time in China a book has been successfully compiled in this way. The process itself reminds us that dialogue and communication is very important for cooperation and exchange between different cultures.

Finally, I would like to say, that Sheffield, where Sheffield Hallam University is located, is the most important base for the modern British metallurgical industry and has very good materials technology and engineering resources. The commercial design studio of the Art and Design Research Centre, 'Design Futures', takes full advantage of these resources, and has a wealth of practical experience in the combination of innovative engineering and design, while their knowledge about marketing and avoiding the risks of innovation also has an important strategic value. The cases provided by SIA have an important reference value for current China's product research and innovation of design method. In recent years the School of Design at CAFA has seized the opportunity of the rapid growth of Chinese economy and social developments, and put a lot of energy to participate in social design, and has also made a positive and successful attempt in converting the national cultural resources and the academic resources of the School to place itself at the leading edge. The way of working and the value of innovation of the two teams are not the same, even the standard is not always the same, but they have something in common in revealing the design process in terms of authenticity and culture.

I hope the publication of this book will inject some life into China's unfolding development of design, and enrich the growing intercultural creative dialogue around us, or at least allow more people to pay attention to the design process representing the hope of the future.

Professor Xu Ping
Institute for Culture and Policy of Design
China Central Academy of Fine Arts



前言

完成《设计进行时》这本书的过程本身就是一个愉快的“过程”(process)。“过程”是一种包含着“始态”与“终态”两端在内的一系列中间形态的变换与展开。而改变“状态”的方式,就是让外界与状态体系之间实现能量交换,或者是使体系对外界“做功”,或者反之也是一样。

而我们——中央美术学院设计学院与谢菲尔德哈姆勒大学的编创团队,从策划到实现这本书的过程中,似乎这几种方式都做到了。

在初始的状态下,我们彼此之间都缺乏了解。斯蒂文·波特先生非常辛苦地数次来访,为CAFA的学生与中国年轻的设计师作讲座,和设计学院的院长及教授们深入交谈,尤其是2009年炎热夏季。他与两位来自谢菲尔德哈姆勒大学设计研究中心和材料工程研究中心的教授在南方的骄阳盛暑之下来回奔波,为中国南方制造业基地的企业与设计师们作讲座,不仅讲座内容带来丰富的信息,那种传播真知的执着与严谨也使我们对于设计的“过程”有了更深一层的理解。

谢菲尔德哈姆勒大学的教授们对于中国设计和中央美院的了解也应当在逐步深入的过程中充实起来的。当下的中国,正处在一个现代设计迅速成长的时期,而中央美院设计学院又几乎是无可选择地位于这种强劲发展的前沿。谢菲尔德哈姆勒的教授们通过中央美院走近了中国制造业与工业设计的前沿,也通过这些交流知道了,中国设计还需要以一种效率化的方式补上很多知识性、经验性的欠缺,尤其是在方法和设计的价值取向方面。而这种提升的最好方式,就是各自拿出自己的作品,放到一个国际对话的情景中进行多种角度的审视和对话。

以上种种“能量转换”和“做功”的结果,是加快了这本书得以成形的默契与合作。两校教授间的愉快合作与交流,真正成为这本书最终诞生的机缘,中英两国两校的设计团队对等地各自拿出十数个设计方案进行“对话”,这可能是国内第一次以这样的方式合编成功的书。这个过程本身就在提示我们,充分的对话与沟通对于不同文化间的合作与交流是何等的重要。

本书设定的第一个命题,曾经是“未来设计”,它本来是针对中英

双方共同的设计取向而设想的。但是在编写的过程中,主创人员又认为只有“过程”才能更直接地表明这种对话的意义所在。本书中的“设计过程”具有双重的含义。一方面,它强调设计的价值在于过程,科学的程序与流程是完美的设计品质的理性保证;另一方面,它也寓示着,今天的设计永远只是达到明天目标的一个台阶、一个阶段。“设计过程”强调了“即时性”、“阶段性”的含义,同时并不弱化“指向性”价值。因为不言而喻,未来即为当下,目标寓于过程,现实的流动性决定了设计的终极价值永远处于一种需要思辨、明析和确认的状态之中。

最后我想说的是,谢菲尔德哈姆勒大学所在地是英国最重要的现代冶金产业重镇谢菲尔德城,拥有极为优秀的材料工艺与工程技术资源,这所大学的“未来设计研究所”充分地利用资源优势,在工程创新与设计的结合方面有着丰富的实践经验,同时他们对市场拓展及规避创新风险方面的心得也有着重要的战略价值。谢菲尔德哈姆勒大学所提供的这些案例对于今天的中国产品研究及设计方法创新有着重要的参考价值。中央美术学院设计学院近年来抓住中国经济与社会建设迅速发展的机会,投入了大量精力参与社会性设计,在转化民族文化资源与学院学术资源成为领先优势方面作出积极的、也是成功的尝试。两支团队的工作方式与创新价值并不一样,甚至水准也并不如一。但是在揭示“设计过程”的真实性与文化性方面,却有着同样的可资借鉴之处。

期望本书的结集出版,能为方兴未艾的中国设计发展增添一些活力,丰富一下我们身边正在不断展开的跨文化的创造力对话,或者至少可以让更多的人去关注这个代表未来希望的设计过程。

许平

北京奥运会 奖牌设计

摘要

2008年奥运会和残奥会奖牌设计是应2008年奥组委要求，通过竞标的方式而获得设计权，奥运会是第一次由中国举办，在当时是一件大事。从一开始的竞标到最后奖牌的制作完成历时两年多，在这个过程中，主要分为几个阶段，竞标阶段，修改阶段，完善阶段，生产制作阶段。

竞标阶段

在招标之前，08奥组委发出了招标文件，要求为奖牌设计必须具有中国文化特色，体现中国风格，并与已完成的2008年北京奥运会基础形象元素相协调。

根据这个总的设计思路，设计团队进行了几轮的讨论和选择，最终提交了四个不同方向的设计方案，金玉结合的方案是其中之一，最终08奥组委选择了金玉结合的方案。

选择金玉结合方案的原因

玉文化在中国有近8000年的历史，在每个历史时期都与当时的社会，文化甚至经济有着直接的联系。

在早期的封建社会，它是一种礼器，是一种祭拜仪式上的必需品；同时，又是身份的象征，不同身份，不同等级的人佩戴不同的玉，它也是中国传统文化的一部分，是一种美好，吉祥的象征物。

在近代的社會中，它又具有了经济价值，又是艺术收藏品，是无价之宝。鉴于以上原因，玉代表中国文化得到有关的专家和评委的认可。

北京奥运会奖牌创意小组成员名单

项目总监：

王敏

设计总监：

杭海

王沂蓬

肖勇

许平

主设计师：

杭海

王沂蓬

肖勇

主要成员：

薛梅

刘洋

王子源

朱子甲

王璐

刘宇晗

张儒赫

姜音

包世洪

吴迪

李政



视觉来源：螭龙纹玉璧(东汉)

2008年奥运奖牌玉石的筛选
Selection of the jade for
the 2008 Olympics medals

Design Team of the Medals for Beijing 2008 Olympic Games

Project Director: Min Wang

Creative Director: Hang Hai, Wang Yipeng, Xiao Yong, Xu ping

Primary Designer: Hang Hai, Wang Yipeng, Xiao Yong,

Team Member: Xue Mei, Liu Yang, Wang Ziyuan, Zhu Zijia, Wang Lu,

Liu Yuhan, Zhang Ruhe, Jiang Yin, Bao Shihong, Wu Di, Lizheng

Design of the medals for the Beijing 2008 Olympic Games

Summary

In accordance with the requirements of the Organizing Committee for the Beijing 2008 Olympic Games and Paralympics Games, the design rights for the medals were obtained through bidding. The whole process was divided into three stages: bidding stage, modification stage, perfection and production stage.

Description of the project

Bidding stage

Prior to tender, the Beijing 2008 Olympic Organizing Committee issued an invitation to bid and requested that the design for the medals must possess Chinese cultural flavors, reflect Chinese style and be harmonious with the basic elements of the 2008 Beijing Olympic Games. According to the overall design concept, the design team at Central Academy of Fine Arts conducted several rounds of discussion and selection, and finally, four different proposals were submitted. 'Gold and Jade' was one of these and was eventually chosen by the 2008 Olympic Organizing Committee. Jade culture has a history of over 8000 years in China and it has had prevailing social, cultural and economic links with each historical period. In early feudal society, jade was a ritual and a necessity in worship ceremonies. Currently, it is a status symbol, as people of different social status and different classes wear different types of jade. It is also part of traditional Chinese culture as a beautiful and auspicious symbol. In modern society, jade has an economic value, but also as an invaluable art collectible. In view of the above reasons, the fact that jade represents Chinese culture was recognized by experts and judges, hence the proposal of 'Gold and Jade' was chosen as the winning design of the 2008 Games medals.

Modification stage

After the initial concept was approved, the design was refined and modified. The size of each part was also adjusted. In the initial design jade was placed in the middle of the medal for engraving the Beijing Olympics emblem. However, the special texture and color of jade made the emblem difficult to see clearly. It was modified by Design team to solve this problem. Finally the design team drew the inspiration from 'Bi', a China's ancient jade piece inscribed with dragon pattern. They adopted the shape of the 'Bi' (a flat jade disc with a circular hole in the center) so that the medals are inlaid with jade with the Beijing Games emblem (the "Chinese Seal-Dancing Beijing") engraved in the metal centerpiece and hence became the highlight of the medals.

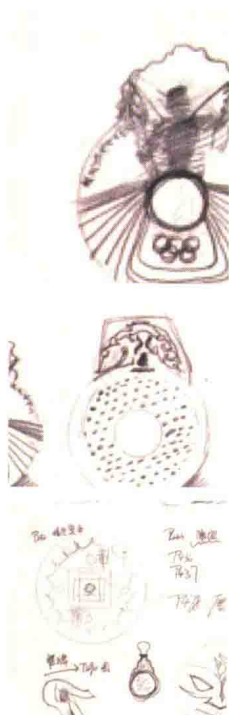
In order to ensure the identifiability of the medals of



修改阶段

在最初的理念被认可之后，又在形式感上作了推敲和修改，各部尺寸进行了调整。在最初的设计中，玉被放在奖牌的正中，用以镌刻北京奥运会徽。但由于玉的特殊材质和色泽，使得会徽图案被弱化，甚至无法看清。针对这一问题，设计团队对此进行了修改，最终，设计团队从龙纹玉璧的造型中找到了灵感。

他们采用了玉佩的造型将玉环镶嵌在奖牌之上，中间圆心部分改为金属，这样奖牌便成为一个由金属包裹的「玉佩」造型，中间圆心上镌刻的「中国印」也因此而显得熠熠生辉。为了保证奖牌金、银、铜识别性的同时，彰显「玉」的特点，使「金」、「玉」材料达到视觉上的完美结合。



奖牌修改完善小组对玉石在牌面所占的比例进行了多次调整、尝试，最终将奖牌背面金属边缘的宽度由3毫米增加到9毫米，从而突出奖牌的金属质感，增加了奖牌的金属识别性。2008年，在环绕玉佩的金属边上将被刻上获奖运动项目的名称。在色彩搭配上，金、银、铜牌分别配以白玉、青白玉和青玉。既要考虑到玉的品质，同时也选择与奖牌颜色的合理搭配。在设计完善过程中，专家和设计团队还去掉了原本在玉石上镌刻「云纹」及「小圆点」设计，使整个奖牌看起来更加纯净、剔透。



奖牌防摔试验1 玉石损坏

Fall protection test 1 - jade was damaged

gold and silver, bronze, in the meantime to highlight the features of "Jade", and to achieve perfect visual effects with the combination of 'gold' and 'jade' materials, the proportion of jade in the medals was adjusted and tested several times by the medal modification and perfection team. Eventually the metal edge width on the reverse side of the medal was increased from 3.5 mm to 6 mm, therefore giving prominence to the medal's metal texture and increasing the metallic identifiability of the medals. In 2008, the metal around the jade was engraved with the name of the sports.

To match colors, gold, silver and bronze medals were accompanied by white jade, white jade with a darker shade and green jade respectively. The quality of jade had to be taken into account, as well as the rational matching colors of the medals. In the perfection process, experts and the design team also removed the engraved "moire" and "small dot" in jade in the original design, to make the medals look more glittering and translucent.

Perfection and production stage

To achieve the best visual effect, the medals were designed with a concise but robust style in their modeling and structure. On the obverse side of the medal there is a realistic embossment, while on the back the design shows the concept of the design and is full of variety to highlight the jade surface and increase the changes of elevation. At the same time the contrast and unity of the two materials are particularly important. The golden color is relatively

奖牌防摔试验2 试验成功
Fall protection test 3 - a success

完善和生产制作阶段

造型与结构设计，从整个奖牌的视觉出发，在造型上力求简洁、饱满，因为奖牌的正面是写实的浮雕，背面尽显设计的概括又富有变化，将玉石面突出，增加立面的变化。同时两种材料的变化与统一显得尤为重要。金色相对较纯，与白色比较协调，而白色又不是纯白，稍有色彩。

玉与金的结合的创作理念得到了国际奥委会的认可之后，就进入了技术设计阶段，国际奥委会提出奖牌在最终确认奖牌的玉石损毁率很低之后，才能最终批准此设计方案。

由于外观设计已定，不能改变外观的部分，只能对技术进行改进，为了解决这个技术难题，设计团队进行了结构和材料设计。

通过对奖牌的厚度尺寸，玉石抗冲击力与厚度的关系，冲击力传递的介质

特性等因素的分析，我们采取的方法是，在两种硬质的材料之间加注防震阻尼材料，当奖牌无意受到冲击时，外框的金属部分首先吸收部分冲击力，然后，经阻尼材料减震，减小玉石的冲击力。

由于奖牌的尺寸很小，给减震设计造成了困难，经过试验和调整，对金属材料的硬度和减震材料的硬度进行改变，吸收外部冲击，以减少玉石破碎概率。最终经自由落体实验，奖牌可抗击1米高度的自由落体冲击力，挂钩与奖牌连接为焊接，经实验可承受800公斤拉力。在奖牌表面结构设计中，充分考虑工艺的可实现性，尽量减少浮雕的起伏高度，增加金属的易加工性。

在设计与加工精度上首先设计8厘米直径的大样，然后用仿型设备缩小到8毫米，使写实的浮雕更细致、更生动。

pure and harmonious with the white color, but the white color is not pure, having a slight hue. After the design concept of the combination of the gold and jade was accepted by the International Olympic Committee, it entered into the technical design stage. The IOC would only approve the design if the damage rate of the jade was low. The appearance of the medal could not be changed as the design was set, only the technical aspects could be improved. The improvement was made on the structure and material by the design team in order to solve the technical problem. Through the analyses on the factors such as the thickness of the medal, the relationship between high-impact strength and thickness, media characteristics for impact transmission etc, the approach taken was to infill a damping material between the two hard materials. When there is an accidental impact against



the medal, the metal part of the frame first absorbs part of the impact, and then through the vibration reduction effect of the damping material, the impact on the jade itself is reduced. Since the size of the medal is very small, this caused difficulties for the impact reduction design. The hardness of the metal material and shock-absorbing material was improved through several trials and adjustments to absorb external shocks in order to reduce the probability of jade damage. In the final free-fall experiment, the medal could resist the impact of 2 meters free-fall. The connection between the hook and the medal is welded and can withstand 500 kg of tension.

The feasibility of the process was considered fully in the surface structural design of the medals to minimize the relief height and ease production. The prototypes of the medals were initially designed and produced as 30 cm in diameter, and then downsized to 60 mm using a profiling machine to make the embossed decoration more delicate and more vivid.

The entire design process was divided into two major parts. The first part was the creative design where the main problem to be solved was how to blend Chinese culture into the Olympic medals and how to embody Chinese values. The second part was the technical design, where the main problem was how to decide the formation between different materials to ensure the implementation of the creative design. Creative design and technical design



2008年奥运奖牌最终效果
The medals of the 2008 Olympic Games