

工业设计系列丛书

ENGLISH FOR INDUSTRIAL DESIGN

工业设计专业英语



何文波 叶字程 编著



清华大学出版社

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清华大学出版社
北 京

内 容 简 介

本书选材上基本涵盖了工业设计的学科领域,由概念篇、产品篇、色彩篇、人机篇、环境篇及原理篇组成,书中还特别增加了一些创新思维方面的文章,希望通过它们可以开阔读者的思路,从创新的角度去进行设计。每章还附有若干相关的阅读材料,以利于读者扩大阅读范围,增加专业词汇量。本书选材具有一定的现实性和新颖性,适合于工业设计专业本、专科学生学习专业英语之用,也可供相关专业和对工业设计有兴趣的非专业人士使用。

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邮 编: 100084

客 户 服 务: 010-62776969

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序

我们已走进多彩的以人为本的创新时代，在这个新时代里，出现了新的经济-技术-文化平台。

最伟大的发明——电脑，电脑是人脑的好助手，它帮你加快设计图形的重新组合，从认识现实走进创造虚拟的多彩世界。

最伟大的发现——人体基因，破译人类本身的密码，是人们却病延年的好帮手。

最高明的思维和决策——提出“事理学”为方法论，整合以人为本与可持续发展观，使物际、人际和人与自然的关系走上一种自然人文观和自然结构系统重新整合的新思维。

这个新时代为工业设计提供了加速发展的机遇。工业设计在市场经济发达的国家中，早已有之，而刚走进市场经济的我国，才只有二十多年的历史。面对这种差距，有待我们加快赶上，为此必须加速培养创造型人才，纠正知识技巧型、摹仿型人才培养的误导，这也是编写这套丛书的目的。这套丛书有如下特点：

(1) 创造性——艺术设计的灵魂在于创造。本丛书的切入点，在于创造。创造性思维与知识堆砌不同。知识是靠积累而成，灵感则靠偶然。而创造性思维是靠目标与方法的一致性调动人们心灵中的闪光点使之形成有意义的链。例如形象思维中的“联想”，抽象思维中的“风马牛效应”，是非常重要的而又切实可操作的创意方法。

(2) 理论性——目前有关“工业设计”的书刊中（包括国外的），或较少探索理论，或脱离设计实践的空洞理论词段的拼凑。这是由于“工业设计”是多科性交叉学科，要创立一个理论体系，要求作者同时通晓技术、艺术、经济、哲学乃至与生活的关系。当前，也有理论性的分析，如功能论、艺术构成论、人本论和人机工程学等。这些成果带有理论性，是几代人努力的结果，它们都有助于理论体系的建立，该丛书在此基础上进行了一些理论及其体系的探索，把技术、艺术和市场三者“融合”起来，试图使三者相互渗透，构成一个理论体系。例如把传统的“艺术美”的均衡、对称、比例等法则，发展为“宜人美”的法则。即在以人为本的前提下，把“宜人”分解为5种因素，并重新排列为安全与绿化，人机之间的协调和交互反馈，爱感、情感、愉悦感的人情味，高科技、高素质、高益智的追求，形式美等。

(3) 应用性——在上述原理的基础上，演绎出5种设计方法。本丛书提出的方法源于原理，包括总体方法即广义的形象思维方法，构思上供方与求方的沟通方法，构形上的宜人方法，构图上重新组合的方法和技法，并举出了相关实例。

(4) 图文并茂——图形占很大比重，以文为纲，以图为目的，有利于表达思路。

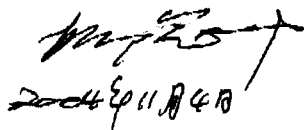
(5) 成套性——本丛书包括《创造学及其在工业设计中的应用》、《工业设计的原理、

方法及实例》、《家电和日用品的造型设计》《工业设计透视与阴影》、《计算机图形设计艺术》、《工业设计专业英语》、《工业设计结构素描》、《设计创新管理》。

(6) 适应性——本套教材深入浅出，特别注意启发学生的想像力和创新能力，并提供了一套方法及其练习，是经过多年教学积累，吸收毕业生就业后反馈的意见加以总结提高而成，使内容更为完整和系统，适用于大专学生作为起点的教材。本教材建立的理论体系，也可提供给教师和研究生，作为理论性探讨的参考。

著名的科学家杨振宁说过：“技术与艺术的灵魂都是创新。”该丛书在力求探索想像力创新与工业设计的关系时，念念不忘这位伟大科学家的感言。

河南科技大学创造学与艺术设计研究所编写的这套工业设计丛书，探索了工业设计原理并且演绎出来一套工业设计方法，较有创意。这对从理论上提高我们的设计水平，有一定启发，是一套目前较适合高校工业设计的教材，也是教师和从事工业设计的专业人员的参考用书。



2004年11月4日

前 言

随着我国产业化发展进程，中国将逐步全面融入国际社会，在此大背景下，工业设计的重要性也被越来越多的人所认识，“设计”一词也被广泛应用。而社会生活的信息化和经济的全球化，也要求我们了解国外最新的设计发展动态，掌握第一手的设计资料。目前各个设计院校及设计界都在开展广泛的对外交流，英语作为最重要的信息载体之一，作为每个人与世界沟通的媒介，已成为人类生活各个领域中使用最广泛的一种语言，它的重要性也日益突出。熟练掌握工业设计方面的专业英语对于进行国际交流及自身的发展，跟上时代的发展潮流都具有重要的意义。然而目前工业设计方面的英语教材却少而又少，满足不了人们的需求。针对这种情况，我们编写了《工业设计专业英语》这本书，希望通过它可以帮助更多的人提高专业水平和英语交流能力。

本书有以下主要特色。

1. 内容广泛、涵盖面广：工业设计本身是一门交叉性的学科，涵盖面比较广。本书的选材也尽可能地体现这一特色。本书由概念篇、产品篇、色彩篇、人机篇、环境篇及原理篇组成，基本上包括了工业设计的内容，可从不同角度、不同层次、不同深度给读者提供信息。书中还特别增加了一些创新思维方面的文章，希望通过它可以开阅读者的思路，提供创新的灵感，从创新的角度去进行设计。

2. 选材新颖、材料充分：书中所选文章多为近几年发表的，涉及了国外比较新的设计思想及方法（如生态设计、可拆卸设计、以人为本设计等），使读者可从中学到不少专业知识，并拓宽眼界。本书不仅有正文，还有一定数量的阅读材料，可以扩大阅读范围，增加专业词汇量。每一篇文章后都附有一定数量的单词、短语和难点解释，可帮助读者更好地理解文章。

3. 适用面广、层次丰富：本书的内容难、中、易相结合，适合于各种水平的人员，包括工业设计专业的在校本、专科学生及研究生使用，也可以为专业设计人员参考使用，还可以作为对工业设计有兴趣的非专业人士使用，都可以学有所得。

本书是在我们长期的教学实践及科研工作的基础上，参考了兄弟院校相关课程的教材和国外资料编写的。它的选材从学生的学习兴趣、生活经验和认知水平出发，提倡实践、参与、合作与交流的学习方式，激发学习兴趣，使学生在在学习语言的同时，专业水平也有所提高。而且与其他相关课程（如人机工程学、工业设计史、色彩构成等）有紧密的联系，可以在不同时期选用不同的文章，使学生触类旁通，相互补充，起到事半功倍的效果。

参与本书编写的主要人员有河南科技大学何文波、叶宇程，全书由何文波主编并统稿。在撰写此书的过程中，困难重重，幸得清华大学出版社有关领导和徐培忠老师的大力

支持及林庆嘉老师的大力协助，特别是清华大学美术学院柳冠中教授和河南科技大学梁桂明教授的鼓励和支持，此书才得以完成并出版，在此一并表示由衷地感谢。由于时间仓促，水平有限，书中难免有不当之处，望请读者指正。

编 者

2004年5月于河南科技大学

Contents

Concepts	1
Lesson 1 Workplace Design.....	1
Lesson 2 What Is Design.....	5
Lesson 3 Sustainability.....	8
Lesson 4 Packaging Design.....	13
Lesson 5 Designing for Data.....	19
Concepts Free Readings	23
Universal Design.....	23
User-Centered Design.....	26
Eco Design.....	31
Global Designers Discuss How They Transform Groundbreaking Thought into Reality.....	33
Examples of Sustainable Design.....	37
Timeless Design.....	39
Product Design	42
Lesson 6 Getting a Grip on Kitchen Tools.....	42
Lesson 7 Sony Digital Dreams.....	47
Lesson 8 Digital Design: New Frontiers for the Objects.....	50
Lesson 9 A Brief History of Chinese Furniture.....	54
Lesson 10 Chair Design.....	57
Lesson 11 White Goods.....	64
Lesson 12 Modo Moves Medicine.....	69
Product Design Free Readings	74
Cutting Edge Design.....	74
Wood Furniture Construction: What You Need to Know.....	76
The Importance of Ergonomics to Your Well Being.....	80
The Right Materials.....	81
iGesture Zero-Force Advanced Mouse for Computer.....	86
Excellent Design Product.....	88

Coca-Cola Bottle	97
The Bauhaus Design Movement	98
Innovation and Creativity in Industrial Design—as Much Problem-Finding as Solution Finding	100
Design Made the Difference	103
Product Design	105
Color Design	109
Lesson 13 Color and Usability Matters	109
Lesson 14 Johannes Itten: The Art of Color	112
Lesson 15 Color, the Chameleon of the Web	116
Lesson 16 The Meaning of Color for Gender	119
Lesson 17 Color Theory	124
Color Design Free Readings	129
Color and Energy Matters	129
Color for the New Workplace	130
Primarily Color	135
Color and Vision Matters	136
The Language of Color	139
Color Drawing	143
Ergonomics Design	147
Lesson 18 About Ergonomics	147
Lesson 19 Working Painlessly	152
Lesson 20 History of Ergonomics	161
Lesson 21 Ergonomics in Computer Environments	164
Lesson 22 Workstation Ergonomics and Upper-Body Injuries	168
Lesson 23 A New Paradigm of Office Ergonomics	175
Ergonomics Design Free Readings	181
Ergonomics and Workplace Design	181
Ergonomics and Work	184
Anthropometry	191
Ergonomics and Product	193
Ergonomics	195
Ergonomics, Barrier-Free Design, Universal Design, Assistive Technology and Their Benefits	198
How Interior Design Improves Productivity	200

The Office of the 21st Century	203
Ergonomics Glossary	205
A Proper Fit	209
Designers Talk about Ergonomics	213
Environment Design	215
Lesson 24 Redefining the Workplace	215
Lesson 25 Resolve Rethinks the Workplace	219
Lesson 26 Urban Tech	224
Lesson 27 Lighting and the Elderly	229
Lesson 28 Luminosity	232
Lesson 29 Office Interface	237
Environment Design Free Readings	241
Ooh! What a House	241
Personal Space	244
The Sociable Kitchen	245
Dream Kitchen	247
Creative Stimulus	249
Depth of Vision	251
Light Fantastic	254
Behind the Scenes: Chair Design	257
Bolt of Lighting	260
Theory	263
Lesson 30 The History of Bauhaus	263
Lesson 31 The Design Process	268
Lesson 32 Canada Design	271
Lesson 33 Design for Disassembly: A new Element in Product Development	274
Lesson 34 Changing Aesthetics	280
Lesson 35 Power to the People	285
Lesson 36 Introduction to Digital Painting	289
Theory Free Readings	293
Industrial Design	293
Famous Designers	294
Innovation	299

Design and Management	302
Age in Place—Design for the Elder	305
The Cage of Aesthetic Convention	308
A Whole World of Universal Design	313
Creative Thinking	316
Inspirations and Innovations	319
Easy Type Modification Tricks	322

Concepts

Lesson 1 Workplace Design

Jeremy Myerson

In brief

Also known as innovative workplaces.

As the knowledge-driven economy of the 21st century places a premium on generating new ideas and intellectual property, the creation of more-innovative workplaces in which fresh thinking can develop and teamwork can flourish has become a central preoccupation for senior managers in many different types of organization.

As a concept, the “innovative workplace” responds to a growing recognition within employing companies that the physical working environment can have a profound effect on an organization’s culture and on the individual’s performance.

Successive anthropological studies have demonstrated a proven connection between habitat and human behavior. Today, there is widespread acceptance that the traditional habitat for white-collar work—the modern office—has significant shortcomings in terms of planning, layout, facilities and aesthetics. These shortcomings prevent organizations and individuals from working to their full potential in terms of innovating effectively.

Designing offices to release innovation potential within the organisation links the application of a number of design processes directly to the realization of organisational goals. These processes include space-planning, interior, architectural, furniture and lighting design.

Designing innovative workplaces is not about creating visually “wacky”, attention-grabbing environments. It is about closely tailoring the physical environment to the requirements of developing new knowledge within the organisation.

So what are the key issues at the heart of this concept? Inside any organisation, it is important to ask searching questions about the current office environment—and look at how physical and spatial improvements and the provision of different equipment might support innovation practices.

Are long stretches of dark corridor and closed doors really conducive to people sharing

knowledge and ideas? Are anonymous meeting rooms booked by the hour really the best setting for project teams to brainstorm and pin up ideas? Is a dowdy and cramped reception area really the ideal shop window for potential collaborators visiting your organisation for the first time? Are linear rows of metal desks under fluorescent strip lighting really enhancing the search by your employees for that great new idea?

Office design has many different, interrelated elements, including spatial layout, lighting, furniture specification, material finishes, technology services and catering provision. Within this framework, a number of conflicting agendas must be addressed to achieve a more holistic balance if workplace design is to act as a catalyst for a more agile, and responsive work culture. It is important to recognise these conflicts at the outset. There are five in particular.

First, designing innovative workplaces must reconcile the needs of the organisation with those of the individual. Traditionally, office managers have been in charge, and employees have had little say over their environment. But does this bring out the best in people?

Second, innovative workplaces must balance the need for fixed real estate against the reality of increasingly flexible and fluid work patterns. In the mix of office-based, mobile and home working, how can innovation be managed?

Third, innovative workplaces must combine workspace with public or social space. How much of the office space should be private, privileged (a club) or public and therefore open to all-comers?

The fourth conflict to resolve is architecture versus design. How much of the workplace investment should go into the bricks and mortar of the building shell, and how much into less permanent interior settings and flexible leases? Finally, organisations need to look at the image of their workplace. Does it suggest an automaton (reflecting famous architect Mies van der Rohe's belief that an office is "a machine for working in") or can it express more human values? All of these conflicts resonate in the practice of designing innovative workplaces.

Challenges

There are a number of key challenges in developing a more innovative workplace strategy:

Credibility

Making changes to your workplace to foster innovation faces a stiff credibility test. There is often widespread cynicism among employers about design changes and a belief that new-fangled ideas will never work. Therefore proposed developments must be credible in terms of the organisation's purpose and values. Design concepts must be robust in terms of meeting real needs and avoid accusations of being faddish. **Otherwise ideas which might have value in the long term risk being swept away by a wave of skepticism.**

Ownership

Linked to credibility is the challenge of ownership. Think twice before handing down edicts from on high about how the workplace is going to be remodeled. Your people have to live in that environment every day of the working week. **If the process of making design changes can involve employees and act as a sounding board for their views then they will come to “own” the new solutions and have more of a vested interest in making them work effectively.**

Cost

Any changes to the physical fabric of buildings such as knocking down walls or introducing new spatial layouts can be costly, complex and highly disruptive. Many of the most highly publicized examples of innovative workplaces are expensive corporate schemes which feature extensive remodeling, new atria and bespoke furniture. This level of cost is not relevant to all organisations, such as SMEs (Society of Manufacturing Engineers) or certain public sector agencies. However with some smart thinking, design concepts to support innovation can be introduced within a prudent level of expenditure.

Accessibility

Part of making your workplace more innovative is making it more accessible to all ages and abilities so that everyone can contribute at an equal level. This is of growing importance as demographic change introduces greater diversity in the workforce. Regulatory compliance is an issue here. The main legislative deadline in the UK is the October 2004 implementation of the Disability Discrimination Act, which covers 8.7 million people. This requires workplaces to be accessible to disabled people and is encouraging a rethink by firms of current spatial and building practices.

Measurement

Whatever changes you make, those developments should be measurable. So it is important to decide at the outset what evaluation criteria you are going to use to measure the design scheme. It is important not to load the entire future of the company onto how the new work environment works. Equally, you should not divorce workplace innovation entirely from business performance factors. A mix of sensible measurement criteria such as rates of staff retention and recruitment, staff days off sick and levels of intensity of space occupancy can be used to evaluate the changes over time.

Future trends

Business pressures

All commercial organizations will face growing pressure from shareholders to reduce costs while adding value to their processes. Increased competition will also mean cutting time to market, while producing ever more innovative products and services. These business pressures will

force an acute focus on how property is used and how people are organized within space.

Work-life balance

Employees will increasingly campaign for new solutions on issues related to work-life balance, stress and overwork, and the breakdown of family units. This will force employers to re-think their work environments to support more flexible, humane and comfortable patterns of work.

Technological change

Rapid introduction of low-cost mobile communication and information technologies will make people less place-dependent and encourage use of the office in more random and imaginative ways.

Demographic time bomb

A rapidly ageing population (50% of European adults will be over the age of 50 by 2020) will see growing numbers of the over-50s remaining in the workplace for an extended time. Their experience and knowledge will be essential but they will expect work environments to cater for their needs. Governments may also raise the retirement age to reduce benefit costs.

New Words and Phrases

preoccupation	n. 成见、急务、全神贯注
premium	a. 优质的 n. 奖金、保险费
intellectual property	知识产权
anthropological	a. 人类学的
catalyst	n. 催化剂
in terms of	依照、用……的话说
wacky	a. 古怪的
spatial	a. 空间的
holistic	a. 整体论的
real estate	不动产
workspace	n. 工作区
pin up	钉住
dowdy	a. 过时的、懒散的
fluorescent	a. 荧光的 n. 日光灯
agile	a. 敏捷的
sounding board	传播意见的方法、造舆论的途径
reconcile	vt. 和解、调停、使一致
mortar	n. 灰浆、砂浆

automaton	n. 自动装置
resonate	vt. 共鸣、共振
prudent	a. 审慎的、慎重的
disruptive	a. 分裂的、破坏性的
shareholder	n. 股东
skepticism	n. 怀疑论
retention	n. 保持、保留、记忆力
cater for	迎合，供应伙食
time bomb	定时炸弹

Translations

Otherwise ideas which might have value in the long term risk being swept away by a wave of skepticism.

否则，那些具有长远价值的观念就有被怀疑论清除的危险。

If the process of making design changes can involve employees and act as a sounding board for their views then they will come to 'own' the new solutions and have more of a vested interest in making them work effectively.

如果在设计改变的过程中能使员工参与进来并听取他们的意见，那么这将会成为他们“自己的”新的解决方案，可以使他们更高效地工作来获取更多的既得利益。

Lesson 2 What Is Design

Design is everywhere—and that's why looking for a definition may not help you grasp what it is.

Design is everywhere. It's what drew you to the last piece of furniture you bought and it's what made online banking possible. It's made London taxicabs easier to get in and out of and it made Stella McCartney's name. It driving whole business cultures and making sure environments from hospitals to airports are easier to navigate.

The single word “design” encompasses an awful lot, and that's why the understandable search for a single definition leads to lengthy debate to say the least.

There are broad definitions and specific ones—both have drawbacks. Either they're too general to be meaningful or they exclude too much.

One definition, aired by designer Richard Seymour during the Design Council's Design in Business Week 2002, is “making things better for people”. It emphasizes that design activity is focused first and foremost on human behavior and quality of life, not factors like distributor

preferences. But nurses or road sweepers could say they, too, “make things better for people”.

Meanwhile, a definition focused on products or 3D realizations of ideas excludes the work of graphic designers, service designers and many other disciplines. There may be no absolute definitions of design that will please everyone, but attempting to find one can at least help us pin down the unique set of skills that designers bring to bear.

Translations

Design could be viewed as an activity that translates an idea into a blueprint for something useful, whether it’s a car, a building, a graphic, a service or a process. The important part is the translation of the idea, though design’s ability to spark the idea in the first place shouldn’t be overlooked.

Scientists can invent technologies, manufacturers can make products, engineers can make them function and marketers can sell them, but only designers can combine insight into all these things and turn a concept into something that’s desirable, viable, commercially successful and adds value to people’s lives.

There are many misconceptions about design. Sunday supplements and glossy magazines often use ‘design’ as a buzzword denoting style and fashion. While the toaster or corkscrew being featured may be well designed, the result is to feed the belief of would-be design clients that design is restricted to the surface of things and how they look, and that it’s best employed at the end of the product development process.

But good design isn’t simply about the surface. Aesthetics is important, but only a part of a bigger picture.

Design is fundamental. People often need reminding that everything around us is designed and that design decisions impact on nearly every part of our lives, on the environments we work in, the way we book holidays, or the way we get the lid off the jam jar. When those things work, it’s taken for granted, but, as Bill Moggridge, founder of international consultancy IDEO, says: “A lot of trial and error goes into making things look effortless.”

Design and the user

Good design begins with the needs of the user. No design, no matter how beautiful and ingenious, is any good if it doesn’t fulfill a user need. This may sound obvious but many products and services, such as the Sinclair C5, WAP mobile phone services, and a great many dot COM businesses failed because the people behind them didn’t grasp this.

Finding out what the customer wants is the first stage of what designers do. The designer then builds on the results of that inquiry with a mixture of creativity and commercial insight.

Although instinct is part of the designer’s arsenal, there are more scientific ways of making sure the design hits the mark. Different designers use different methods—combining market re-