何人可 等 编

工业设计专业英语

（第3版）

北京理工大学出版社
BEIJING INSTITUTE OF TECHNOLOGY PRESS

工业设计专业英语
（第 3 版）

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第三版前言

　　《工业设计专业英语》(第2版)于2003年9月出版以来，已先后重印了多次，受到了本专业学生的欢迎。一些同学还在网站上开辟了有关本书的论坛，交流学习专业英语的经验和心得。我们注意到，经过10多年的发展，国际国内工业设计专业都发生了巨大的变化，无论是设计的理论研究、设计技术，还是设计对象都有了很大发展，面向数字化、网络化和可持续发展的未来趋势，传统的设计对象和设计内容已经延伸和扩展并产生出了交互设计、系统设计和服务设计等更宽泛的设计领域，尤其是在互联网和移动互联网的信息时代背景下，设计开始更多地讨论人机交互、用户体验的问题，关注更多的设计促进社会创新，改变消费方式和社会服务系统创新等方面。与此同时，国内和国外工业设计界的交流与合作日益频繁，各种国际设计论坛、设计竞赛、设计培训等设计学术活动日渐增多。未来的设计人才既要具有国际视野，又要有本土文化背景。国内的企业为了应付日益激烈的国际竞争，也要求设计师对国际市场有充分的了解，并能与国外的厂商进行有效的沟通，这些都对设计师的专业外语水平提出了更高的要求，与此相适应，本书的内容也必须进行适当的修订。另一方面，经过10多年来的教学实践，读者也对本书提出了一些中肯的修改意见。有鉴于此，我们对《工业设计专业英语》(第2版)进行了相应的修订。

　　《工业设计专业英语》(第3版)保留了前两版的基本结构，去掉了原来的"环境设计"章节，新增了"服务设计"单元，并将原来的"图形设计"该为"视觉设计"，其他标题不变的章节也对70%以上的内容进行了更新。新的课文反映了工业设计专业的理论研究和实践在近年来的最新发展，主要添加了最新的用户体验、交互设计、系统设计、服务设计和可持续设计等方面的内容，介绍这些最新的设计领域及其优秀设计案例，并适当介绍一些专业的设计方法。这些内容大多来自于国外主要设计媒体和设计专业著作，内容具有更强的时效性和知识性。通过学习这些课文，读者在提高自己的专业英语能力和水平的同时，也可以了解到近年来国际工业设计的新成果和新动向。

　　《工业设计专业英语》第一、二版由何人可、张兵、江建民编写，第三版由何人可、张军、袁翔和谭浩编写。

何人可

2012年6月28日于岳麓山下

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Unit 1

Design History & Theory

Lesson 1

Design-Led Innovation

By Design Council/UK

In 2006 our former Chairman, Sir George Cox, was commissioned by The Treasury to undertake a review of creativity in business, and to recommend how the governments, educational institutions and businesses could help support economic growth.

Supporting innovation sat at the heart of his recommendations because he saw that the UK currently earns most of our living through high value creative industry, and that without protection, investment and development, our creative industries could **falter in** the face of developing international competition. Sir George saw that designers working as part of a multi-disciplinary team, with business managers, engineers, scientists and technologists, can support innovation in the UK.

In the Cox Review he offered a definition of design:

> *"Design is what links creativity and innovation. It shapes ideas to become practical and attractive **propositions** for users or customers. Design may be described as creativity deployed to a specific end."*

UK businesses can stay ahead of their global rivals by drawing on the country's world-leading design capabilities, said Sir George, and the then Chancellor Gordon Brown, who commissioned the report, supported this conclusion.

"Five years later, the world has moved on," says Sir George. "There's been great international interest in The Review and we've gone through **recession** and economic crisis." Continuing international competition means we now, more than ever, have to invest in developing our innovation economy, and working with designers offers technologists and scientists the opportunity to turn their inventions into marketable products that meet people's needs and provide an enjoyable experience that customers want to buy.

Other design and innovation experts agree:

> *"When people talked about innovation in the 1990s, they really meant technology. When people talk about innovation in this decade, they really mean design."*
>
> — Bruce Nussbaum, BusinessWeek

The Government too has changed. It's no longer led by Gordon Brown and the coalition

government has new priorities. Yet, in November 2010, the Department for Business, Innovation and Skills released a **Blueprint for Technology** as part of its plan to put the technology industry at the heart of the UK's economic recovery. This Blueprint shares much of the same vision as people in the 1990s who said innovation was technology-led:

*This Government believes technology-based innovation will be one of the key drivers of the private sector led economic growth that Britain so urgently needs. The **dynamics** of the global economy have been changing for some time, with technology and innovation at the heart of new global economic opportunities.*

— Blueprint for Technology, 2010

Over the last decade the Design Council has worked with business people, technologists and designers to demonstrate that it is through collaboration and working as part of a multi-disciplinary team (involving technologists, engineers, business managers, scientists, **marketeers**, designers and consumers) that market leading innovations are created.

Apple, Dyson, Virgin Atlantic all know that designers are an essential part of new product and service development, and that innovation can secure and sustain a business. Sir George says, "Dyson. There's no recession at Dyson. If you use design properly, you don't experience any recession."

As part of the Multi-disciplinary Design Network, we have investigated how design practice and education can work more closely with business and STEM subjects.

We offer support programmes for UK businesses and university technology research centres. Find out how we're showing technology developers at UK universities how working with designers can help them market their inventions.

"You cut to survive, not to succeed."

— Sir George Cox

Jonathan Sands, designer and founder of design business Elmwood agrees. "In this current economic climate, there will be lots of losers. There's absolutely no doubt of that. Sadly, businesses will go bust. But the successful ones are those that will invest in design, because, if you do what you've always done, actually you won't even get what you've always got. But, if you think about new futures, you will get new and exciting results. And it requires a bit of bravery. And, sometimes, that does mean putting a year's profits aside to, to do something new. But only one business or brand or product can be the cheapest. The rest have to do something different. And, actually, in this current economic climate, most businesses have got **margins** of zero anyway, because we're in the **credit crunch**, people can't afford stuff. So, do you really want to compete in that space? Well, I would argue not. You have to do something that's better and different where you can make money and move forward," says Sands.

 New Words

proposition [ˌprɔpəˈziʃən]   *n.* 主题，议题，对策
recession [riˈseʃən]   *n.* 衰退，不景气
dynamics [daiˈnæmiks]   *n.* 演变，动力学
marketeer [ˌmɑːkiˈtiə]   *n.* 市场营销人员
margin [ˈmɑːdʒin]   *n.* 利润，边缘，页边

 Phrases and Expressions

falter in   动摇
credit crunch   信贷危机

 Notes

Design Council   英国设计委员会
Blueprint for Technology   技术蓝图（英国政府的一项计划，旨在支持高科技创新企业）

 Free Reading

Design's Role in Innovation: Film

How can design help good ideas get to market? Watch a short film to find out what advice the industry experts at The Big Rethink had to offer.

Great new ideas — the sort that make businesses grow and make daily life better — can come from anywhere. But design-led innovation is coming to be seen as one of the faster, more reliable and less risky ways of generating them.

Watch this short video of designers and business people discussing how businesses who think design begins and ends with decoration are in for a bumpy ride. But the ones who use it to move forward are the ones worth working with, says Paul Bennett from design consultancy IDEO.

Why? Because the methods and processes designers use ensure that the people who will ultimately become the idea's users and customers are always central to how it is developed. Also, because the possible form of the finished product, service or system starts emerging early in the design process, it can be tested early too, so promising ideas are identified early and weaker ones are discarded before large scale finance is committed.

The Redesigning Business Summit, which we staged with The Economist, looked in detail at how design can help good ideas get to market. This short film sums up views from the conference floor, from speakers and delegates.

Eddie Obeng, Director of Learning at the Pentacle virtual business school and a member of the Design Council, presented a sobering statistic — only one in 100,000 ideas "actually translate into something which is making money for real in the market two years later."

It could be that more of those ideas need what Politecnico de Milano's Prof. Roberto Verganti described as design's ability to add "meaning." "Through design, you can understand better what people want and mean when they buy things, but you can also innovate the meaning of things, because design is making sense of things. People don't just buy technology and utility, they buy meaning and emotion and symbols."

Alongside design, businesses need people skilled at interpreting shifting patterns in people's lives if they are going to discover this meaning and profit from it — people capable of thinking beyond current trends and making new connections. When Apple wanted to design a new computer in the late 1990s, said Verganti, it didn't hire the world's most famous computer designer to do it. It went instead for Jonathan Ive, whose career had been in household and bathroom products. That was because the Internet had turned the computer into a household product and Apple knew it needed a designer to interpret that change.

It might also pay businesses to take on board product designer Richard Seymour's point that design is not just the link between creativity, innovation and successful commercialisation. "It's more than that. Designing, creating things is not linear. It's chaotic. If you bring that further up the food chain in what you do, you will understand how it works. It will scare you, but you'll understand it."

"Ideas are a dime a dozen, but properly targeted, commercialised, exquisitely beautiful, compelling and addictive products are not, and the people who can do those things are the designers."

Design-Inspired Innovation

Our purpose in writing Design-Inspired Innovation is to explore the ways in which communities of art, design, and innovation are merging and influencing each other in the world of material culture to create great new products. What makes products great? What is the role of design firms in creativity and innovation, and how is this role changing? What accounts for design firms' successes? How are the processes of innovation and design changing? Does a focus on design inspire innovation and enhance chances of competitive success? What strategies might result in more inspired design and innovation?

This book reports the results of a study undertaken to explore these questions, which includes interviews with the founders of nearly 100 design firms in four countries — Sweden, Italy, England, and the United States — and in several industries. The sample ranges from three divisions of the largest international design firm to some of the smallest and newest firms working in their local

areas. We have looked broadly at contributions to advancing innovation and design in several types of products, including consumer electronics, devices for personal mobility, and others.

Manufacturers are responding to changes in technology and market demands by trying to introduce new products into the market more rapidly. They struggle with new and converging technologies that create opportunities for developing entire new product categories and with the entry of new types of competitors. Larger firms enjoy great resources in technology and science, but these resources seem to be growing more available and open to all. Smaller groups and organizations derive greater innovative capabilities from the widening variety of sophisticated design resources available, such as computer-aided design, simulation, and visualization techniques.

We conclude that products, to be successful, must be distinguished by more than sufficient function, consistent quality, and low cost. Our findings and examples imply that considerable competitive advantage might be gained by reconsidering traditional products with a fresh eye and approach that employs newer materials and design techniques. Why do only a few of the welter of products on the market seem to account for the bulk of sales and profits in many categories? We believe it is because these products emphasize customer delight, elegance, and enduring value. They may even acquire increasing value over time.

Our work could be said to have begun with a puzzle posed in 1980. Sweden's larger firms were dramatically reducing employment within Sweden while expanding abroad. At the same time, the formation of new firms in Sweden was in marked decline.

Where were the growth and jobs to secure the future of the economy to be found? Could a way be found to stimulate the development of new products and new companies and thus secure the future?

Jim Utterback and Bengt-ArneVedin became part of a team of Swedish and American researchers asked to conduct a study to address sources for future growth. Their working hypothesis was that the creation of new firms based on technological innovation might lead to a net creation of wealth, jobs, and exports. They proceeded to study 60 new firms in Sweden — about half the population of start-ups founded in the previous 15 years — and a similar number around Boston for comparative purposes.

The American firms matched Jim and Bengt-Arne's expectations, although their export performance was relatively weak. A mere quarter of the Swedish firms, however, were truly based on new technologies as their main competitive advantage. Another quarter identified their advantage as "design." Jim and Bengt-Arne found these firms to be almost the entirety of the sample enjoying rapid growth. Firms lacking advantages in technology or design tended to grow slowly or not at all. If anything, the firms stressing design were the most successful in the sample.

At the time, Jim and Bengt-Arne did not follow up this provocative idea, but the study was the start of a long friendship and conversation. Later, Jim and Bengt-Arne met Susan Sanderson, who was pondering a similar puzzle among firms in Japan that produced portable music players. Among the myriad models being offered, only a few lasted more than briefly in the market and those few garnered the lion's share of all sales and profits. Most were produced by one firm, Sony, and

seemed again to emphasize design in addition to function. In fact, the name of Sony's product — the Walkman — became almost the generic name for portable music players.

A sabbatical at the Harvard Business School in the fall of 1997 gave Jim a chance to share an office with Roberto Verganti. Roberto was part of a larger group of researchers investigating the role of designers and design firms in the economic health and growth of Milan and Lombardy. Could excellence in design be a key ingredient in ensuring a vibrant economy?

An invitation to join the advisory board of the Centre for Research on Innovation and Competition (CRIC) at the University of Manchester led Jim to find that Bruce Tether was in the midst of analyzing data from firms that had received the Millennium Design Awards in the United Kingdom. The awards were given for the most notable new products to appear in the country. While many were indeed highly innovative in a technical sense, an even greater source of success seemed to be either the formal or implicit effort toward excellence and balance in design.

When Bengt-Arne joined the Department of Innovation, Design & Product Development at Mälardalen University, headed by Sten Ekman, Jim and he decided that the time was right to act more directly on our hunch that outstanding product design offered an unappreciated means to competitive and economic success. Their first meeting led to an agreement to conduct a parallel study, with each of us working intensively in our own countries. We were joined by a number of students along the way, one of whom, Eduardo Alvarez — a talented designer and entrepreneur — also became a partner in our work. Coordination took the form of two meetings each year rotating among our various universities and at several conferences where preliminary work was presented. Heads of local design firms participated enthusiastically in several of these gatherings, notably in Milan and Sweden.

While we were searching for general themes we were immediately struck by how diverse the environments and ways of working seemed to be in our different countries. These observations have taken root in our discussion of the differing nature of the design systems and networks in each area studied. We also discovered a sharp difference of opinion within our group around which variables and relationships might hold greater sway in creating value. Should excellence in function and cost weigh more heavily, or might people be more attuned to symbols and somehow to the meanings conveyed in their use of various products? The issue of combining balance and wholeness in a user's experience is indeed the crux of the problem.

Good Design in the Digital Age

Richard Buchanan

"Good design" is an important issue in current discussions of websites and digital products in general. The explosive development of the digital medium has flooded the market with a wide array of information products of varying quality. Many of these products are highly effective, but a significant number fail to meet the expectations of consumers or satisfy the needs of businesses. As competition increases, we wonder if there are criteria to guide the development of new products for

the digital environment.

Is there a practical framework we can use as a touchstone in judging the quality of new products?

While the issue of good design is a pressing question today, we should remember that "good design" is also a phrase from the past that carries a mixed message. From 1949 to 1955 the Museum of Modern Art, along with the Merchandise Mart of Chicago, produced a series of exhibitions and educational programs to promote design excellence in the United States. It was called the Good Design program, and its director, Edgar Kaufmann, Jr., was aided by some of the leading designers of the day. In many ways the program was a great success, focusing public and corporate attention on the quality of products, affecting consumer perception and encouraging manufacturers to improve the quality of their products through wider use of professional designers. But the program was also controversial because it promoted a certain number of specific products selected by Kaufmann and his juries. To be sure, the criteria of "good design" were not mistaken. All of the products were examples of good design, displaying qualities of beauty as well as functional clarity and efficiency. But the selections also represented the tastes and preferences of a relatively small, elite social group, and many other examples of good design were neglected. Over time, the standards of the Good Design program became a heavy-handed authority in the minds of many people, standing as an obstacle to personal enjoyment of the diverse goods that surround us in our daily lives. The program ended up promoting standards that were too narrow for a country undergoing explosive technological, social and cultural change.

Good design for the digital medium shares some features of the "good design" movement of the past, but it also presents some strikingly different features that deserve close attention. Perhaps the greatest change in good design, today, comes from a change in the designer's stance. By this, I mean the designer's perspective on the problem of designing effective products for the marketplace. The historical "good design" movement — and much of design thinking throughout the 20th century — gave us an external perspective on products. The focus was on form, function, materials and the manner of industrial production. While the close connection of form and function pointed to the value of product performance, the product itself was judged in isolation from the immediate situation of use. In fact, the exhibition of good products at MoMA emphasized their isolated independence; they were typically displayed on pedestals against neutral backgrounds, signaling a cultural statement with symbolic meaning. There was little sense of the context in which products would be used by people in daily life.

This is where good design today departs significantly from the past. Designers place a premium on performance, but the designer's stance is more intimately involved with human experience. Designers today explore products from the inside, focusing attention on performance as it is understood by the people who use products. For this reason, many designers explore "user experience" and employ insights from the social and behavioral sciences. They explore not only form and function, but also form and content, since content is what human beings seek in digital experiences. In short, designers explore what is useful, usable and desirable in products.

Many people believe that the only task of design is to provide styling to the visual appearance of products. This is a mistaken conception, comparable to the idea of the man in the street that the primary job of a CEO is to put a public face on the workings of his or her corporation. While visual expression is an important part of the work of the designer, the fundamental work lies in discovering the central argument of a product: the dramatic plot that shapes human interaction. What I mean by "argument" or "plot" is the ability of a product to fully engage a human being in support of a particular activity — whether the activity is a search for information, the conduct of a transaction or the casual enjoyment of exploring how other people express themselves in the new medium. Design is not a trivial aspect of the development of information technologies; it is the central discipline for humanizing all technologies, turning them to human purposes and enjoyment. In creating interactive digital environments, the designer's stance is grounded in effective communication. This means more than simply conveying information or doing so in a manner that is persuasive in the narrow sense of seducing and manipulating. It means engaging the intended community of end-users in a lively process of perception, judgment and action. Here is where the criteria of good design enter — and here is where I will give a personal interpretation of what I see emerging around us in digital products.

When I first encounter a website or other digital products, I ask, what is its intended use? What is it useful for in my life? In short, I look for content and purpose, and I make a fateful commitment to trust those who have conceived and designed the product. What I trust is that designers have tamed the complexity of the content, shaping it with intellectual efficiency and clarity. This is what it means to create a useful product, one that does its job well. In fact, the first task of the designer is to understand the content of the product, and to this end designers often collaborate with those who are expert in the content. What the designer adds, however, is a significant measure of common sense — sometimes lacking in content experts who know their subject matter but do not know how to present its logic to an ordinary human being.

I can seldom judge the full logic of a digital product on first encounter, and that is why trust is important in the beginning. Logic, structure and "rules of engagement" emerge only slowly, over time. But this is where the second question comes forward in my mind: Do I have easy access to the product? Is it usable from the first screen, the first cursor blink? Can I begin a personal exploration without fear of making fatal mistakes? I do not ask for precise instructions, because I, like many others, like to play with the environment in my own personal way. But I do ask for important navigational clues — and they are particularly important when the product should serve an intensely practical purpose, such as financial transaction. In fact, this is the second task of the designer: to understand my needs and limitations, and to provide the "affordances" that enable me to move forward with a feeling of accomplishment and satisfaction. Admittedly, this is a very difficult matter, requiring not only common sense but a specialist's knowledge of the mind and body. For this reason, designers work closely with "usability" specialists, who are often cognitive psychologists and social scientists — experts who have studied things like the limits of short-term memory in human beings, the most comfortable patterns of information display or the willingness

of an ordinary person to cope with ambiguity and uncertainty. Here, too, the designer adds something important that technical experts may neglect — the ability to bring grace and elegance into forms and devices that are humanly engaging, often exciting and sometimes unexpected. Designers add marvel, and that can make a product more deeply usable, reaching beyond the prosaic or pedestrian.

Usability counts for a lot in any encounter with a new product. It is what allows me to explore the product and discover what it has to offer. But there is a third question that enters my mind soon after the first and second questions: Do I really want to explore this product? This is a very personal question. It goes beyond the utility of the product and beyond issues of usability. When I have choices in the marketplace, why should I select this product over that? Why do I feel more comfortable with a particular website or other digital convenience? This is the subtle domain of the desirable, and it is often neglected — particularly when the culture of a company focuses on engineering and computer programming or when there are few choices available among competitors. But desirability plays an important and often decisive role in product selection. Does the product speak to me in a "voice" that makes me comfortable and that, just by its tone and quality, builds a bridge of identification and trust with me?

At first glance, this is an issue for marketing experts, since they study the deep appeal of products across different segments of the marketplace. For this reason, designers often work closely with marketing experts to develop strong and consistent branding strategies. Whereas marketing tends to stop at the segment level of analysis — addressing the general qualities that appeal to a general group of consumers — designers transform such assessments into concrete product features. By the nature of their own expertise, designers often explore unexpected or not easily predicted features that add distinction to the voice of a product. Sometimes these are aesthetic qualities, but often the features added by the designer are best regarded simply as cultural expressions suited to the pluralism of contemporary life.

Qualities of usefulness, usability and desirability play a central role in good design for websites and all digital products. But there is one final step to turn them into useful tools of product development: discovering the proper balance of all three qualities for a particular product and the people who use the product. This is a strategic design decision, because it is fundamental in developing any product. If these are the criteria for good design in the digital environment, it is evident that they do not set a simple standard for quantitatively measuring the value of every product. In fact, the criteria help to explain the incredible diversity of good products today and the diversity of designers, since the range of utility, usability and desirability is so great. More important, the criteria suggested here should help guide strategic design planning as managers seek special niche opportunities and product differentiation in the marketplace. The real challenge in seeking good design is to distinguish in every individual case how the elements of the useful, usable and desirable are poorly or successfully explored for effective communication.