



普通高等教育
“九五”国家级重点教材



中国科学院研究生教学丛书

研究生英语系列教材

博士研究生英语续读

李晓棣 张文芝 编著



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内 容 简 介

本书是与《博士研究生英语精读》配套的泛读材料,全书按照《博士研究生英语精读》的课文顺序和内容分为12个单元,每个单元有2~4篇阅读文章,大部分选自美国的出版物,分别从不同角度或层面围绕主题进行广泛、深入的探讨,使学生在丰富思想和增长知识的同时提高英语阅读能力。

本书适合于非英语专业博士研究生学位英语教学,也可作为高等院校各专业硕士研究生及科研人员提高英语技能的参考用书。

图书在版编目(CIP)数据

博士研究生英语续读/李晓棣,张文芝编著. —北京:科学出版社, 2002.11

(中国科学院研究生教学丛书. 研究生英语系列教材)

ISBN 7-03-010902-3

I. 博… II. ①李…②张… III. 英语-研究生-教材 IV. H31

中国版本图书馆CIP数据核字(2002)第081442号

责任编辑:韩学哲/责任校对:柏连海

责任印制:刘士平/封面设计:槐寿明 韦万里

科学出版社 出版

北京东黄城根北街16号

邮政编码:100717

<http://www.sciencep.com>

丽源印刷厂 印刷

科学出版社发行 各地新华书店经销

*

2002年11月第 一 版 开本:787×1092 1/16

2002年11月第一次印刷 印张:18 3/4

印数:1—4 000 字数:422 000

定价:30.00元

(如有印装质量问题,我社负责调换〈新欣〉)

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《中国科学院研究生教学丛书》序

在 21 世纪曙光初露,中国科技、教育面临重大改革和蓬勃发展之际,《中国科学院研究生教学丛书》——这套凝聚了中国科学院新老科学家、研究生导师们多年心血的研究生教材面世了。相信这套丛书的出版,会在一定程度上缓解研究生教材不足的困难,对提高研究生教育质量起着积极的推动作用。

21 世纪将是科学技术日新月异,迅猛发展的新世纪,科学技术将成为经济发展的最重要的资源和不竭的动力,成为经济和社会发展的首要推动力量。世界各国之间综合国力的竞争,实质上是科技实力的竞争。而一个国家科技实力的决定因素是它所拥有的科技人才的数量和质量。我国要想在 21 世纪顺利地实施“科教兴国”和“可持续发展”战略,实现邓小平同志规划的第三步战略目标——把我国建设成中等发达国家,关键在于培养造就一支数量宏大、素质优良、结构合理、有能力参与国际竞争与合作的科技大军。这是摆在我国高等教育面前的一项十分繁重而光荣的战略任务。

中国科学院作为我国自然科学与高新技术的综合研究与发展中心,在建院之初就明确了出成果出人才并举的办院宗旨,长期坚持走科研与教育相结合的道路,发挥了高级科技专家多、科研条件好、科研水平高的优势,结合科研工作,积极培养研究生;在出成果的同时,为国家培养了数以万计的研究生。当前,中国科学院正在按照江泽民同志关于中国科学院要努力建设好“三个基地”的指示,在建设具有国际先进水平的科学研究基地和促进高新技术产业发展基地的同时,加强研究生教育,努力建设好高级人才培养基地,在肩负起发展我国科学技术及促进高新技术产业发展重任的同时,为国家源源不断地培养输送大批高级科技人才。

质量是研究生教育的生命,全面提高研究生培养质量是当前我国研究生教育的首要任务。研究生教材建设是提高研究生培养质量的一项重要的基础性工作。由于各种原因,目前我国研究生教材的建设滞后于研究生教育的发展。为了改变这种情况,中国科学院组织了一批在科学前沿工作,同时又具有相当教学经验的科学家撰写研究生教材,并以专项资金资助优秀的研究生教材的出版。希望通过数年努力,出版一套面向 21 世纪科技发展、体现中国科学院特色的高水平的研究生教学丛书。本丛书内容力求具有科学性、系统性和基础性,同时也兼顾前沿性,使阅读者不仅能获得相关学科的比较系统的科学基础知识,也能被引导进入当代科学研究的前沿。这套研究生教学丛书,不仅

适合于在校研究生学习使用,也可以作为高校教师和专业研究人员工作和学习的参考书。

“桃李不言,下自成蹊。”我相信,通过中国科学院一批科学家的辛勤耕耘,《中国科学院研究生教学丛书》将成为我国研究生教育园地的一丛鲜花,也将似润物春雨,滋养莘莘学子的心田,把他们引向科学的殿堂,不仅为科学院,也为全国研究生教育的发展作出重要贡献。

钱亦群

《研究生英语系列教材》序

中国科学院研究生教材建设项目是 1996 年启动的,其中中国科学院《研究生英语系列教材》已被教育部列为“普通高等教育‘九五’国家级重点教材”。

面对我国外语教育迫切呼唤改革与创新的现实,我们努力将多年的实践和思考融会在这一英语系列教材建设项目中,旨在探索构建我国硕/博研究生阶段英语教材建设的理论框架,注意扭转在这一层次上还依然存在着的以教授技能为核心的纯功利倾向。我们认为,硕/博阶段的外语教学应该强调教材的思想含量,应该批判性地引介西方的主流价值观和各种科学与文化思潮,从而使我们有可能从理论上给后期的、乃至全盘的外语教育做出正确的定位。

高层次的外语教学理应内容与语言并重,使学生广泛涉猎知识和全面提高语言能力二者同步,以此增强学生对语言的兴趣,培养他们运用语言的良好习惯。我们同时还认识到,帮助学生学会分析与比较,激发学生想象与思考,也是这一层次的外语教学应负有的使命。针对理工类硕/博研究生,我们不仅考虑到他们原有的教育背景和已有的知识结构,更考虑到他们今后的发展前景,力争弘扬人文精神和科学精神并举。我们认为,外语教育乃是素质教育的重要组成部分,在经济全球化大潮涌动的 21 世纪,对这一组成部分与素质教育的关系进行全面的理性思考,必将成为我国教育界,尤其是高等教育界的一个严肃课题。

本系列教材分为精读、泛读、速读、听说和写作五大类,按计划自 2000 年起陆续出版。藉此,我们对中国科学院研究生教材出版基金评审会、中国科学院人教局、科学出版社的各位有关成员所给予的支持与鼓励,对中国科学院研究生院、中国科学技术大学和中国科学院上海分院进修学院所有参与、指导编写工作的中外籍专家,以及参与教学实践与评估的老师、学生,表示最诚挚的感谢!正是通过大家的热情支持和参与,本系列教材才可能按计划完成和出版。

限于全体编写人员的水平及经验,我们热切期望使用本套教材的专家学者和朋友从多方面给我们提出批评和指正,以期使本套教材得以不断提高和完善。

李 佩 龚 立

2000 年 12 月

编者的话

本书是与《博士研究生英语精读》配套的泛读材料。全书按照《博士研究生英语精读》课文的顺序和内容分为 12 个单元,每个单元有 2~4 篇阅读文章,分别从不同的角度或层面围绕主题进行广泛、深入的探讨。学生通过阅读此书,可以进一步了解同一主题下的相关内容或进行不同层面的思考,引发多方位思维,在丰富思想和增长知识的同时提高英语阅读能力。

文章的选材和注释

本书的大部分文章选自美国的出版物,分别在每篇文章首页的脚注中注明了出处。为了便于读者较全面地了解文章及其作者,几乎每篇文章都提供了对作者较详尽的介绍,该介绍材料大部分来源于互联网,采用时对部分内容进行了编辑。文章中凡涉及人文、历史、地理、宗教、政治等背景知识的词或用语,在脚注中都给予了注释。注释力求语言简洁,信息量大,旨在帮助学生更准确地理解原文。注释的内容大多数摘自 MICROSOFT ENCARTA ENCYCLOPEDIA 2002 (1993~2001 MICROSOFT CORPORATION),部分摘自互联网。

为了使读者顺畅地阅读,在读的过程中尽可能少查字典,我们在每篇文章中选择了一些我们认为有可能造成学生阅读困难的词或表达式,用黑体字标出,在该篇文章后面的 DIFFICULT WORDS OR EXPRESSIONS 部分中分别给予了注解,给出其在文章中的意义。每篇文章所注解的词或表达式的数目因文章的长度和难度而有所不同。

阅读理解题的设计

本书所设计的阅读理解题有两类:一类是阅读过程中回答的问题,以文件框的形式出现在文章的右边;另一类是阅读后的思考题,放在文章后面的 MEANING AND IDEAS 部分。

1. 阅读过程中回答的问题

在阅读过程中设置一些问题,旨在引导学生通过停顿、思考、回答问题有效地追随文章作者的思路,从而达到比较准确地理解原文的整篇意义的目的。设置的问题中,有的涉及对有关论点的总结,有的涉及对下一步信息的预见,有的涉及对某些细节的理解,有的涉及对作者的表达意图的揣摩。问题涉及的内容与其相对于文章所处的位置密切相关。有些问题可以在离其较近的文章的字里行间中直接找到答案,有些问题则须对所读的相关信息进行一次小结才能回答。总之,提出这类问题的目的在于引导而非阻碍学生阅读。

2. 阅读后的思考题

这类问题一般都涉及文章整篇层次的内容,或者涉及较第一类问题范围更大、层次更深的内容,目的在于促使学生在阅读整篇文章之后对所读内容进行回味,对有关问题和看法进行深入的思考,引发自己的观点和看法,锻炼思维能力。因此,这类问题的答案,有些涉及文章的中心思想和大意,有些则是开放性的,任凭学生想象和发挥。

在本书编写过程中,我们得到了中国科学院研究生院的许多专家和老师的支持和帮助。李佩教授为本书积极地搜寻并提供了素材,所提供的一些参考书为本书的最终设计起到了很重要的推动作用。张亦政教授和于振中教授一直非常关注博士研究生英语教材的建设,对本书的编写提出了许多指导性和建设性意见。本书编写的初期,外语教学部的许多老师都提供了素材,部分老师试用了本书并提出了修改意见。曾从事过专职编辑工作的美籍教师 Tabatha Henning 仔细通读了全书,不仅从语言上而且从设计形式上对本书提出了非常宝贵的修改意见和建议。刘红参与了文字录入工作。在此,我们对上述专家和老师们致以诚挚的谢意。

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UNIT 1 MAN'S KNOWLEDGE OF THE UNIVERSE

READING 1

THE POWER OF NEGATIVE THINKING*

John D. Barrow

John D. Barrow is Professor of Astrology at the University of Sussex, England. He is the author of several best-selling books, including *Theories of Everything* (1991), *Pi in the Sky* (1992), *The Artful Universe* (1995), and *Impossibility: The Limits of Science and the Science of Limits* (1998). This last book, from which this text is taken, looks at what limits there might be to human discovery, and what we might find, ultimately, to be unknowable, undoable, or unthinkable.

That's what I like Lord Young. While you all bring me problems, he brings me solutions.

MARGARET THATCHER¹

Bookshelves are stuffed with volumes that expound the successes of the mind and the silicon chip. We expect science to tell us what can be done and what is to be done. Governments **look to** scientists to improve the quality of life and safeguard us from earlier "improvements." **Futurologists** see no limit to human inquiry, while social scientists see no end to the **raft** of problems it **spawns**. The contemplation by our media of science's future path is dominated by our expectations of great interventions: cracking the human genetic code, curing all our bodily ills, manipulating the very atoms of the material universe, and, ultimately, fabricating an intelligence that exceeds our own. Human progress looks more and more like a race to manipulate

Why is the word
"improvements" in
quotation marks?

What is the general
speculation about the
future of science?

* This is the first section of Chapter 1 "The Art of the Impossible" in *Impossibility: The Limits of Science and the Science of Limits*. Oxford: Oxford University Press, 1998.

¹ Thatcher, Margaret Hilda (1925-): first woman to hold the office of prime minister of the United Kingdom (1979-1990).

the world around us on all scales, great and small.

It would be easy to write such a scientific success story. But we have another tale to tell: one that tells not of the known but of the unknown; of things impossible; of limits and barriers which cannot be crossed. Perhaps this sounds a little **perverse**. Surely there is little enough to say about the unknown without **dragging in** the unknowable? But the impossible is a powerful and persistent notion. Unnoticed, its influence upon our history has been deep and wide; its place in our picture of what the Universe is like at its deepest levels is undeniable. But its positive role has escaped the critics' attention. Our goal is to uncover some of the limits of science: to see how our minds' awareness of the impossible gives us a new perspective on reality.

According to the author, has enough attention been paid to the impossible?

When we are young we think we know everything. But if we grow wiser as we grow older we will gradually discover that we know less than we thought. The poet W.H. Auden¹ wrote of human development that

between the ages of twenty and forty we are engaged in the process of discovering who we are, which involves learning the difference between accidental limitations which it is our duty to **outgrow** and the necessary limitations of our nature beyond which we cannot **trespass** with **impunity**.

What is the general process of human development concerning the understanding of man himself?

Our collective knowledge of the **nuts and bolts** of the Universe matures in a similar way. Some knowledge is simply the accumulation of more facts, broader theories, and better measurements by more powerful machines. Its rate of growth is always limited by costs and **practicalities** that we steadily overcome by **attrition**, little by little. But there is another form of knowledge. It is the awareness that there are limits to one's theories even when they are right. While the modest investigator might always suspect that there are things that will remain beyond our reach, this is not quite what we have in mind. There is a path of discovery that unveils limits that are an inevitable by-product of the knowing process. Discovering what they are is a vital part of understanding the Universe. This means that the

¹ Auden, Wystan Hugh (1907-1973): British-born American poet whose works include *The Dance of Death* (1933). The quotation is from *Dye's Hand* (1963).

investigation of the limits of our knowledge is more than a **delineation** of the boundaries of the territory that science can hope to discover. It becomes a crucial feature in our understanding of the nature of this collective activity of discovery that we call science: a paradoxical **revelation** that we can know what we cannot know. This is one of the most striking consequences of human consciousness.

There is an **intriguing** pattern to many areas of deep human inquiry. Observations of the world are made; patterns are discerned and described by mathematical formulae. The formulae predict more and more of what is seen, and our confidence in their explanatory and predictive power grows. Over a long period of time the formulae seem to be **infallible**: everything they predict is seen. Users of the magic formulae begin to argue that they will allow us to understand everything. The end of some branch of human inquiry seems to be **in sight**. Books start to be written, prizes begin to be awarded, and of the giving of popular expositions there is no end. But then something unexpected happens. It's not that the formulae are contradicted by Nature. It's not that something is seen which takes the formulae by surprise. Something much more unusual happens. The formulae **fall victim of** a form of civil war: they predict that there are things which they cannot predict, observations which cannot be made, statements whose truth they can neither affirm nor deny. The theory proves to be limited, not merely in its sphere of applicability, but to be *self-limiting*. Without ever revealing an internal inconsistency, or failing to account for something we have seen in the world, the theory produces a "**no-go**" statement. We shall see that only unrealistically simple scientific theories avoid this fate. Logical descriptions of complex worlds contain within themselves the seeds of their own limitation. A world that was simple enough to be fully known would be too simple to contain conscious observers who might know it.

What is the significant feature in our understanding of the nature of science?

How do people see human inquiry when they firmly believe mathematical formulae?

What is the usual thing that happens to people?

DIFFICULT WORDS OR EXPRESSIONS

1. **look to**: to depend on someone to provide help, advice, etc.

2. **futurologist**: a person who is learned in futurology, the study or forecasting of potential development, as in science and society, based on current conditions and trends
3. **raft**: a great number, amount, or collection
4. **spawn**: to bring forth; produce; give rise to
5. **perverse**: directed away from what is right or good; marked by a disposition to oppose and contradict
6. **drag in**: to mention something when it is not really relevant to the topic
7. **outgrow**: to cast aside, lose, or forget about as one develops or grows older; grow out of
8. **trespass**: to go onto a forbidden land without permission
9. **impunity**: exemption from punishment, penalty, or harm
10. **nuts and bolts**: the practical details of a subject or activity rather than abstract ideas about it
11. **practicality**: the part of something that deals with or concerns practical events as opposed to theory
12. **attrition**: a reduction or decrease in numbers, size, or strength; a wearing down or weakening of resistance as a result of continuous pressure
13. **delineation**: the process or action of tracing the outline of
14. **revelation**: something which is made known, manifested, or exposed to view
15. **intriguing**: interesting; strange, mysterious, or unexpected
16. **infallible**: incapable of erring or failing; certain
17. **in sight**: likely to happen soon
18. **fall victim of (to)**: to become a victim of something
19. **no-go**: not proceeding or functioning properly

MEANING AND IDEAS

1. What does the author think of the notion of the impossible?
2. What are the two forms of knowledge that the author claims?
3. What does the last sentence of this text imply?

READING 2

MY BUILT-IN DOUBTER*

Isaac Asimov

Isaac Asimov was born in Russia in 1920. He went to the United States as a child and became a citizen in 1928. He was introduced to science fiction in the magazines sold in his father's candy store, and he began writing science fiction stories himself while attending college. At one time a biochemistry professor at the Boston University School of Medicine, Asimov now lives in New York and writes full-time, and he has produced more than 200 books of fiction, nonfiction, humor, and literary criticism. Among his most influential science fiction books are *I, Robot* (1950) and the *Foundation* series, published as a trilogy in 1964. Asimov is also a prolific science writer for popular audiences, and he writes a science column for the *Isaac Asimov Science Fiction Magazine*. "My Built-in Doubter," in which Asimov argues that doubt helps advance science, is from *Fact and Fancy* (1961).

Once I delivered myself of an oration before a small but select audience of non-scientists on the topic of "What Is Science?" speaking seriously and, I hope, intelligently.

Having completed the talk, there came the question period, and, bless my heart, I wasn't disappointed. A charming young lady up front waved a pretty little hand at me and asked, not a serious question on the nature of science, but: "Dr. Asimov, do you believe in flying saucers?"

With a fixed smile on my face, I proceeded to give the answer I have carefully given after every lecture I have delivered. I said, "No, miss, I do not, and I think anyone who does is a **crackpot!**"

And oh, the surprise on her face!

It is taken for granted by everyone, it seems to me, that because I sometimes write science fiction, I believe in flying saucers, in Atlantis¹, in **clairvoyance** and **levitation**, in the

Why was there the surprise on the young lady's face?
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* This essay is taken from *The Blair Reader* edited by Laurie G. Kirsznér and Stephen R. Mandell, 1992 by Prentice-Hall, Inc.

¹ Atlantis: a mythological city, mentioned by Plato in his *Republic*, which is said to be beneath the sea.

prophecies of the Great Pyramid, in astrology, in Fort's theories¹, and in the suggestion that Bacon² wrote Shakespeare.

No one would ever think that someone who writes fantasies for pre-school children really thinks that rabbits can talk, or that a writer of hard-boiled detective stories really thinks a man can down two quarts of whiskey in five minutes, then make love to two girls in the next five, or that a writer for the ladies' magazines really thinks that virtue always triumphs and that the secretary always marries the handsome boss—but a science-fiction writer apparently *must* believe in flying saucers.

Well, I do not.

To be sure, I wrote a story once about flying saucers in which I explained their existence very logically. I also wrote a story once in which levitation played a part.

If I can **buddy up** to such notions long enough to write sober, reasonable stories about them, why, then, do I reject them so definitely in real life?

I can explain by way of a story. A good friend of mine once spent quite a long time trying to persuade me of the truth and validity of what I considered a piece of pseudo-science and bad pseudo-science **at that**. I sat there listening quite **stonily**, and none of the cited evidence and instances and proofs had the slightest effect on me.

Finally the gentleman said to me, with considerable annoyance, "Damn it, Isaac, the trouble with you is that you have a built-in doubter."

To which the only answer I could see my way to making was a heartfelt, "Thank God."

If a scientist has one piece of **temperamental** equipment that is essential to his job, it is that of a built-in doubter. Before he does anything else, he must doubt. He must doubt what others tell him and what he reads in reference books, and, *most of all*, what his own experiments show him and what his own reasoning tells him.

Such doubt must, of course, exist in varying degrees. It is

How does the author introduce the topic "my built-in doubter" and tell his direct opinion about it?

1 Fort, Charles (1874-1932): journalist and editor who formulated theories about psychic and other phenomena.

2 Bacon, Francis (1561-1626): English philosopher who some believe is the actual author of Shakespeare's works.