赵娟　李鲁　主编

高级英语系列教程丛书

高级英语泛读教程

东南大学出版社

Extensive Reading

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·南京·

内 容 提 要

本书编写时严格遵守了《非英语专业研究生英语教学大纲》规定的教学内容、目的和要求，重点放在对语篇的理解和语言的运用上面。该书题材广泛，内容丰富，语言规范，难度适中。书中课文主要选自各种英文原版报刊杂志、英语新闻媒介、网络文章、英语文学作品和名人演说等，内容涉及政治、经济、社会文化教育、当代科学技术、经典文学作品等方面，具有较强的知识性和趣味性。全书共有 12 个单元及练习。

本书适用于非英语专业硕士、博士研究生、工程硕士研究生、研究生课程进修班学员使用，也可供具有中等英语水平的读者自学进修使用。

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编写说明

Bian Xie Shuo Ming

目前多数学校的研究生英语教学仍然在使用按照十年前原国家教委颁布的《非英语专业研究生英语教学大纲》编写的教材，其教学目标、内容和要求已经不能适应21世纪对高层次人才培养的需求。在我校研究生院支持下编写的原“高级英语系列教材”，曾在省内外院校使用多年，收到较好的效果，并获得过华东地区高校优秀教材奖。但是经济全球化和信息时代的到来，对我们的教学内容提出了新的要求，原有的教材已经不能满足目前的教学需求。为了适应新世纪研究生英语教学，我们组织了多年从事研究生英语教学的教师，在原有教材编写的基础上，按照全新的外语教学思想，以着重培养学生语言运用能力为主旨，新编写了这套研究生英语系列教程。

这几年来研究生的培养规模发展很快，生源的英语水平也呈现很大的差异。本系列教程有较强的针对性，特别适合中等英语程度的研究生使用，也适合工程硕士和各类研修班的学员使用。我们希望通过本系列教程的学习，学员们能够较好地发展各项英语语言技能，在综合应用语言的能力方面有显著的进步。

“高级英语系列教程丛书”
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出版前言

Chu Ban QianYan

为了适应当前研究生英语教育发展的新形势，东南大学研究生英语教研室与东南大学出版社共同组织编写了这套《高级英语系列教程丛书》。本套丛书包括《高级英语读写教程》、《高级英语听力教程》、《高级英语听说教程》和《高级英语泛读教程》。作为系列教材的一个组成部分，《高级英语泛读教程》主供阅读课与《高级英语读写教程》配套使用，适合研究生课程、工程硕士研究生、研究生课程进修班学员学习使用。

所谓“泛读”，一是指阅读不仅要量大，而且要内容题材广泛，在扩大知识面的同时，增加词汇量；二是指阅读时不要死抠单词、难句和细节，而是要从宏观上理解和把握文章，争取最大限度地获取文章中的信息。通过大量阅读来培养自己对语言的“习得”能力，在不知不觉中提高英语水平。基于这个目的，本教程所选课文题材广泛、内容多样，材料主要来源于各种英文原版报刊杂志、英语新闻媒介、网络文章、英语文学作品和名人演说等，所选内容有较强的知识性、科学性和趣味性。编者希望通过对本教程内容的学习，学生可以走出自己专业的狭小天地，广泛接触各种读物，在扩大知识面的同时，又能保持和提高自己的英语水平。为了帮助学生有效地阅读，本教材不仅在课文后面附有生词和注释，还安排了阅读理解和问题讨论两种练习形式，旨在培养学生的英语语篇理解能力和语言的运用能力。

全书共有 12 个单元，每个单元由 Text A 和 Text B 两篇课文组成。

本教程在编写过程中得到了东南大学外语系和东南大学出版社的鼎力支持和热情关怀，在此表示感谢。

由于编者水平有限，错误和疏漏之处难免，诚恳欢迎批评指正。

编　者

2005 年 1 月

目　录

Mu　Lu

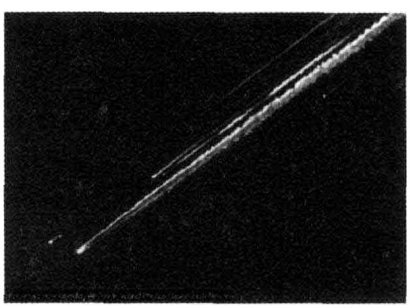
Unit 1
Text A

2 Inches Between Life, Death

By Robert Lee Hotz

The exotic yet simple tiles that protect the shuttle from the heat of reentry symbolize NASA's resourcefulness and its vulnerability.

[1] At 18 times the speed of sound, the line between life and death aboard the space shuttle is about 2 inches thick.



[2] It is the measure of most of its ceramic heat-shield tiles. NASA investigators are still struggling to determine what caused the destruction of the space shuttle Columbia as it hurtled home Saturday. But its protective sheath of about 26,000 tiles is under intense scrutiny in the investigation of the accident that killed seven astronauts and scattered wreckage across the Southwest.

[3] At that speed and that moment in flight—when the temperature is almost twice the melting point of the shuttle's aluminum alloy airframe—almost any calamity ultimately would involve the breach of the heat shield and the breakup of the spacecraft.

[4] The exotic tiles of silica—fused from the purest river sand—are in many ways the essence of NASA itself, embodying the agency's engineering resourcefulness and its daring, as well as its false starts and misjudgments.

[5] They are also, perhaps more than any other part of the most complicated flying ma-

chine ever built, pieces that crystallize a basic dilemma of modem space-flight: how to combine strength and durability in featherweight materials that can survive launch and reentry.

[6] Despite 30 years of refinements, researchers have yet to devise a fundamentally simpler, lighter and tougher system.

[7] Columbia was the first manned experiment in the trial-and-error engineering of a reusable heat shield. Loose tiles, cracked tiles, broken tiles, abraded tiles or missing tiles were part of every shuttle flight.

[8] The shuttle's protective tiles were conceived in the twilight of the Apollo program, when NASA was desperate to keep manned space flight alive, former agency engineers, space analysts and retired aerospace executives said.

[9] As a technical matter, the tiles were an ingenious effort to balance heat, strength, weight, flexibility and the desperate need to protect the shuttle's aluminum alloy frame from the furnace torch of reentry into Earth's atmosphere, said Paul Dimotakis, a professor of aeronautics and applied physics at Caltech.

[10] Tiles begin as glassy 6-inch squares of silica are molded from a slurry of sand, seasoned with traces of exotic chemicals and baked in the world's largest microwave oven. The finished slabs are the size of Texas toast.

[11] They have the heft of balsa wood. They are as porous as a sponge, brittle as a coffee mug dropped on the floor, said Charles McMahon, a metallurgist at the University of Pennsylvania.

[12] At lift-off, even a bouncing piece of cork could damage them, NASA mission records show. Yet these featherweight wafers dissipate heat so rapidly that they can be held under a blowtorch and still remain cool to the touch.

[13] A square foot of shuttle tile cost $ 10,000 to manufacture and install, by NASA's original costs accounting, and could last—at least in theory—for 100 missions. By comparison, a more conventional heat shield absorbed the heat of reentry by ablation—handling heat by charring and burning up a little at a time during descent. It cost about $ 30,000 a square foot and could be used only once.

[14] NASA engineers quickly discovered that layers of insulation and padding were needed. But the tiles pulled in many ways as materials expanded and contracted depending on the temperature. They seriously misjudged how much force the tiles must withstand. A heavy rainstorm, on the launch pad or in flight, was cause for conster-

nation.

[15] The shuttle's aluminum alloy frame and skin also flexed in flight, adding to the strains. Every square inch of the spacecraft behaved differently, said Subra Suresh, a materials engineering expert at the Massachusetts Institute of Technology.

[16] Consequently, each tile is custom-fitted to its exact spot on the shuttle more precisely than a Savile Row suit. There was to be no such thing as a standard, off-the-shelf tile.

[17] NASA engineers also underestimated how much even a relatively small change in the surface of the shuttle tiles could alter the way the craft glided through the air at velocities so many times the speed of sound, said Michael Cima, an authority on advanced ceramics at MIT.

[18] Worse still, they learned that the loss of one tile could undermine the stability of those around it, causing rows of tiles to break away. All told, engineering problems with the tiles helped delay the first shuttle launch for two years.

[19] For 112 flights, the repair records for every space shuttle were a litany of often inexplicable tile dings, gouges and cracks. A 1994 analysis of debris strikes during the first 50 shuttle launches concluded that about 25 thermal tiles per flight sustained damage of at least 1 inch.

[20] The undersides of the wings, close to the fuselage and right under the crew compartment are the most vulnerable parts of the shuttle because they face the external fuel tank and solid rocket boosters during launch.

[21] When Columbia returned from a 16-day mission in December 1997, technicians reportedly found 308 scratches, streaks and cracks in tiles. The damaged tiles were only 2 inches thick and the deepest hits penetrated three-quarters of the way through.

[22] "It has always been one of the most difficult challenges that the shuttle program has had to deal with,"said David Spencer, an aerospace engineer at Penn State.

[23] Even so, almost nothing else among the shuttle's 1 million parts comes quite so close to realizing the ambitious dream of a truly reusable spaceship, said Howard Goldstein, former chief scientist of the space technology division at NASA's Ames Research Center in the San Francisco Bay Area.

[24] After 22 years of wear and two major overhauls, three-quarters of Columbia's original tiles were still in place when it launched its 28th flight on Jan. 16.

[25] Columbia's final voyage began, in so many ways, like its first. On its maiden flight in 1981, the raw fury of its rockets shook the 2,200-ton spacecraft like an empty garbage can. Debris and chunks of ice bounced off the spacecraft windows.

[26] The violence of its lift-off knocked the wing controls out of kilter, bent fuel tank supports and shook loose so many of its heat-shield tiles that NASA officials feared for the lives of the two astronauts aboard.

[27] The critical tiles appeared undamaged. The shuttle and its first crew landed safely.

[28] In all, Columbia had lost 15 tiles, but NASA replaced hundreds more before allowing Columbia to fly again.

[29] Twenty-two years later—on Jan. 16—Columbia again shuddered off the launch pad.

[30] The vibration of its twin boosters shook loose a chunk of foam insulation from its external fuel tank 80 seconds after lift-off. As the shuttle accelerated to 1,900 mph, the foam struck the left wing so hard that the fragment disintegrated.

[31] The astronauts in orbit had no way to inspect for tile damage underneath the spacecraft and, despite so many problems with the tiles, still no way to repair them in space.

[32] This time, however, no one thought an inspection necessary. NASA shuttle engineers analyzed film of the impact, ran a series of computer simulations of the potential damage, and, on the mission's 12th day, decided they could live with the risk.

[33] Tile damage had become an absolutely routine part of every shuttle mission. After every flight, about 40 tiles needed some attention.

[34] Four days later, Columbia reentered Earth's atmosphere for the last time.

[35] NASA scientists and engineers have never stopped looking for a better way to protect human beings returning to Earth from orbit.

[36] For the next generation of space craft, they have tested titanium plates, exotic alloy shields and more advanced ceramics. In its X-34 reusable rocket project, NASA researchers sought to develop tiles that could survive 25 flights at up to 2,300 degrees Fahrenheit, a more modest goal than the 100-flight lifetime goal set by the shuttle's original designers.

[37] For its X-33 space plane project, NASA designers developed more rugged metallic thermal panels and flexible tiles. But flight tests in 1998 showed that even these more advanced materials still cracked and eroded in the rain.

[38] With experience gained over the decades, NASA altered the shuttle tiles in subtle ways, the way tailors change lapels in response to fashion.

[39] When Columbia made its first flight, it was armored in 34,000 tiles. Today, there are 24,000 to 26,000 tiles on every space shuttle, as NASA has refined and improved the materials used in the heat shield.

[40] Each tile is a ceramic souffle that today costs between $2,000 and $3,000 to make, NASA officials said.

[41] Every tile is still unique. Some are white; some black; some have been consolidated into small thermal blankets. Engineers use four kinds of insulation that vary in the temperatures they can tolerate.

[42] Some of the newer tiles are as much as 100 times more impact-resistant than Columbia's original tiles. But they also are heavier and are used only in areas where damage in the past was most common.

[43] The space shuttle fleet still requires many people working with hand-held laser scanners to inspect, tag, document and replace damaged tiles after each mission.

[44] To keep track, each of the thousands of tiles is cataloged according to size, type of tile and location on the vehicle. Each one is marked with an indelible digital barcode. At its height, the manufacture of shuttle tiles was a booming cottage industry, involving 13 contractors from Los Angeles to Dedham, Mass.

[45] But after 22 years, tile operations have been consolidated under one contractor at the Kennedy Space Center in Florida, and the job itself has become more of a museum-restoration task, like replacing one broken plate in a pattern of antique china.

[46] Even before the Columbia accident, scientists were worrying about the effects of age on the reusable tiles. There were concerns that repeated exposure to the stresses and extreme temperatures of space-flight could alter the ceramics in ways normal inspections would not reveal.

[47] "By stressing the tiles over and over, you could make them more susceptible to damage," Suresh said.

[48] Goldstein at NASA's Ames center said that concerns about long-term corrosion had prompted tests and analyses, which showed that the tiles still meet performance standards.

[49] The tiles, in a sense, will always be an experiment. No one has ever flown such ma-

terials back and forth from space so many times. No one can really tell how long they might endure.

[50] "The question of what may be the real lifetime of these tiles is still up in the air." Goldstein said.

Vocabulary

ablation	/æbˈleiʃən/	*n.*	【化】烧蚀
abrade	/əˈbreid/	*v.*	磨蚀，磨损，因摩擦而破损或擦伤
airframe		*n.*	机体，机身
armor		*v.*	为……装甲；为……穿盔甲
bar code		*n.*	条形码
blowtorch		*n.*	喷灯，使混合气体和氧气产生更炽热火焰的便携助燃剂，常用于接合、焊接和玻璃吹制
breach		*n.*	破裂，裂口
brittle		*adj.*	易破裂的，易碎的
calamity		*n.*	灾难，祸患
ceramic	/siˈræmik/	*adj.*	陶器的
char		*v.*	把……烧成炭；烧焦(木材表面)
consolidate		*v.*	合并，把……联合起来或统一；参加合并
consternation	/ˌkɔnstə(:)ˈneiʃən/	*n.*	惊恐，惊愕状态
cottage		*n.*	村舍；小屋
crystallize		*v.*	明确化，具体化
daring		*n.*	大胆，勇敢
document		*v.*	用文件(证件)证明；为……提供文件(证明)
erode	/iˈrəud/	*v.*	腐蚀，侵蚀
essence	/ˈesns/	*n.*	精髓；要素
executive		*n.*	管理人员，执行者
exotic	/igˈzɔtik/	*adj.*	异乎寻常的；奇异的
featherweight		*n.*	非常轻的人或物；不重要者
fury		*n.*	猛烈，狂暴
gouge	/gaudʒ/	*n.*	凿槽，用凿挖出的或像是用这种凿子挖出的槽沟或空穴
heat shield			隔热屏，挡热板
heft	/heft/	*n.*	重量，体重

hurtle		*v.*	呼啸而过
indelible	/in'delibl/	*adj.*	不能消除的，擦不掉的
ingenious		*n.*	精巧的，灵巧的，拥有创造性天才的
kilter	/'kiltə/	*n.*	良好状态
lapel	/lə'pel/	*n.*	翻领，外衣
launch pad			发射坪
litany	/'litəni/	*n.*	连续不断的说明
live with			忍受（不愉快的事）
metallurgist	/me'tælədʒist/	*n.*	冶金学家
off-the-shelf			现成的（货物、商品等）在库存中无需修改、修饰而现成可用的或与此有关的
overhaul	/ˌəuvə'hɔ:l/	*v.*	彻底检查，大修
padding		*n.*	垫料，衬料（用来做垫或衬的一种柔软的材料）
porous	/'pɔ:rəs/	*adj.*	多孔的，有孔的
prompt		*v.*	（常与 to 连用）促使；怂恿
refine		*v.*	改善，改进
resourcefulness	/ˌrʌlnərə'biliti/	*n.*	足智多谋
Savile Row suit			萨维尔·罗的套服
scrutiny	/'skru:tini/	*n.*	详细检查；仔细研究
season		*v.*	给……加调味料
sheath		*n.*	套；任何一种类似覆盖物
shudder		*v.*	震动；颤抖
silica	/'silikə/	*n.*	二氧化硅
slab		*n.*	厚平板，厚片，板层
strain		*n.*	张力，拉力
thermal blanket			隔热层
titanium	/tai'teinjəm，ti-/	*n.*	（化）钛（22 号元素，符号 Ti）
underside		*n.*	下面，内面；下侧
vulnerability		*n.*	脆弱性
wreckage		*n.*	破片；残骸
wafer	/'weifə/	*n.*	华夫饼干；像薄饼一样的东西

Notes to the text

1. NASA（美国）国家航空航天局
2. trial-and-error 试错法（通过反复试验发现弱点或不足，而后进行改进或提高）；反复试验，

不断摸索

3. in the twilight of 在……的(开始,结束)时
4. season 给……调味;这里引申为"添加……成分"
5. Savile Row 是英国伦敦一家著名的成衣老店的名字。在爱德华七世时代,穿一件 Savile Row 做的衣服是一件荣耀的事。这家成衣店缝制的衣服最具特色的地方是衣服翻领上纽孔下面的细线,当在一些场合需要时,可以把鲜花插在里面而不歪倒。
6. out of kilter 失去平衡;失常;在不正常状态下
7. souffle 蛋奶酥(一种鸡蛋与牛奶搅拌为主要成分,烘制而成的松软块状食品)
8. cottage industry (承揽活计回家、使用自备工具从事的)家庭小工业
9. up in the air 悬而未决

Comprehension

1. The title of the text"2 Inches Between Life, Death"indicates that _____.
   A. the measure of most of space shuttles'ceramic heat-shield tiles is 2 inches thick
   B. life and death aboard the space shuttle is unpredictable
   C. it is the 2-inch thick ceramic heat-shield tiles that determine the life and death of the astronauts in the space shuttle
   D. death is almost inevitable for the astronauts who are on a space exploring mission
2. The basic difficulty of modern spaceflight is how to combine durability and strength in very light materials that can survive launch and reentry. (True or False)
3. When spacecrafts reenter the Earth's atmosphere,_____ will play an important role.
   A. NASA engineers　　B. the exotic tiles of silica
   C. mission records　　D. indelible digital bar codes
4. According to the text, which of the following statements is Not true?
   A. Almost any calamity on spaceflight mission ultimately would involve the breach of the heat shield and the breakup of the spacecraft.
   B. Columbia was the first manned experiment in the trial-and-error engineering of a reusable heat shield.
   C. Heat tiles are as porous as a sponge, brittle as a coffee mug, and they are very light.
   D. After 30 years of refinements, researchers have devised a fundamentally simpler, lighter and tougher space shuttle.
5. According to paragraph 14, the sentence"They seriously misjudged how much force the tiles must withstand" implies that it was the fragile tiles that caused the breakup of the space shuttle, which they had underestimated. (True or False)
6. From the text we learn that _____.

A. a relatively small change in the surface of the shuttle tiles won't change the way the craft glided through the air

B. if one tile is damaged it can undermine the stability of those around it, causing rows of tiles to break away

C. modern heat shield can absorb the heat of reentry by ablation, which guarantees the safe flying of the spacecraft

D. three-fourths of the tiles on Columbia are damaged during its reentry after a 16-day mission in 1997

7. Columbia's final voyage is doomed to fail because _____.

A. 80 seconds after lift-off, the vibration of its twin boosters shook loose a chunk of foam insulation from its external fuel tank

B. the violence of its lift-off knocked the wing controls out of kilter

C. it went out of control right after its take-off

D. NASA officials misjudged that there wouldn't be any problem since hundreds of tiles had been replaced

8. If a series of computer simulations of the potential damage were run to analyze the film of the impact, a conclusion made must be correct. (True or False)

9. Are such concerns reasonable that repeated exposure to the stresses and extreme temperatures of spaceflight could alter the ceramics in ways normal inspections would not reveal? (Yes or No)

10. Concerns about long-term corrosion prompted tests and analyses. But can the results of tests and analyses guarantee the real lifetime of these tiles? (Yes or No)

Questions for Discussion

1. What is the main cause of Columbia's crash?
2. What are the uses of heat tiles on spacecrafts?
3. Why do you think the United States is keen on space exploration?
4. Do you think it worthwhile to spend huge amounts of money making spacecrafts, esp. in those developing countries?

Text B

An Airletter From Middle Australia

By Barry Oakley

[1] Millie, we don't often correspond, but the fact is I've had a bit of a heart attack and I'm writing this from a hospital bed. It's not serious but I'll be laid up for two weeks and after that I'll have to take things quietly for a long long while-no cigarettes, no more brandy and dry, not even the swinging of a golf club will be heard.

[2] But it's an ill wind etc. etc. and one of the things I have been doing is thinking—particularly about how we've grown away from each other. Naturally when a man's daughters grow up it's bound to happen, but what our little family unit has done can only be described as disintegrate-with you thousands of miles away in California and Diana up in Sydney but in fact far more distant from your mother and myself in spirit.

[3] Okay, so I have a bit of a guilty conscience about how it happened (though just how did it happen?) but the truth is that your sister Diana is now lost to us for good (which is really why I'm writing) and I only hope the same doesn't happen with you.

[4] Last Friday was my fiftieth birthday (okay, so you forgot to send a card). There I was on April 29th, driving home through wind and rain, Melbourne's grim winter just starting up, twilight, middle age, desolation settling into the bones like damp. A few blocks from home and four birthday brandies under the belt when suddenly this cough starts, dry at first then rumbling and deep, scooping, probing, down there in the lungs, escalating like the Vietnam war till I couldn't see a foot in front