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大学英语立体化网络化系列教材

黄必康◎总主编

第二版

College English Reading

大学英语阅读教程

科技篇

张　丽　李京南◎主　编

北京大学出版社

PEKING UNIVERSITY PRESS

总主编

大学英语阅读教程

（第二版）

（科技篇）

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第二版前言

随着国际化进程的日益加快，我国对外科技交流的层次和规模也不断提升，对国际化、复合应用型人才的需求越来越迫切。《大学英语课程教学要求》对学有余力、英语基础较好的大学生设置了较高要求和更高要求。根据此教学要求，我们组织一线骨干教师重新修订编写了《大学英语阅读教程》(4)，并更名为《大学英语阅读教程(科技篇)》，目标在于为基础较好的学生提供学习素材和策略指导，帮助他们进一步提高科技类英语文章阅读能力，为阅读原版科技文献打下良好语言基础。

《大学英语阅读教程(科技篇)》选取国际主流科技期刊的文章为主要素材，以阅读策略和技巧训练贯穿全书，通过"读""讲""练"有机结合，既注重以内容为基础，帮助学生掌握和积累科技英语词汇和语篇知识，又重视语言阅读策略和应用能力的培养。

本书在编写中突出了以下几个主要特点：

选材主题新颖，素材内容丰富：以当今科技领域的热点话题为线索设置主题，包括科学伦理、大数据、新能源、太空探索、社交媒体、语言认知、基因工程等，语言语境高度贴近现实生活和科学实际。许多材料直接取材于*Science*，*Nature*，*Scientific American*等国际知名期刊和最新出现的网络报道。选材充满信息性和时代感。

突出技能训练：教材设计以多轮课堂教学实践为基础，注重学生读前预测、掌握要领、辨认特定信息、准确理解推理、概括分析等阅读技巧。特别结合单元教学内容，安排了阅读策略指导。通过形式多样的练习设计，以能力培养为核心，实现语言知识到阅读能力的全面训练与提高，同时培养学生自主学习能力、合作学习能力和创新学习的能力。

方便课堂教学：教学素材的选择注重趣味性，课文的长度适合课堂教学。编者力图使学生能在较短的时间内对相关科技话题的知识形成一个宏观的印象，并掌握科技类文章常用的格式化语言、基本套路和技巧。教材精心设计了各类课堂活动与练习，特别注重为学生学习创造了大量的课堂讨论和实践机会，强调学以致用。

总之，本教材的课程安排和选编始终围绕着提高学生科技英语阅读能力这一目的，共选用不同类型、有代表性的科技文章16篇。每篇文章均对重点或疑难词汇做了详注。对于不同程度的学生，教师可根据具体情况，安排教学进度。如果每周2课时，每学期以16周计算，一个学期即可完成本书的全部教学内容。

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Lesson 1

What Is Science?

Lesson Tips

科学是什么？每个人心目中都有自己的定义。诺贝尔奖获得者、物理学家Feynman提出，现代社会里，科学不仅如其拉丁词根scio所指，是知识，也指知识的实际应用——技术以及研究获取知识的方式。科学家是否应该对科学知识在现实中的实际应用担负道义责任？科学发现是怎样使人们不断改变对世界的认识？科学研究有哪些重要的标准和原则？对这些问题，Feynman一一阐述了自己的观点。这篇1966年的演讲，至今读来，仍启人深思。

PART I READING: MEANING NEGOTIATION

Read the following text. The reading notes on the margins may be of help to you in your reading process. If you prefer reading the text straight through without referring to these notes, just ignore them. Or you may want to turn to them for better reading comprehension in your re-readings.

What Is Science?

Richard Feynman

[1] What is science? The word is usually used to mean one of three things, or a mixture of them. Science means, sometimes, a special method of finding things out. Sometimes it means the body of knowledge arising from the things found out. It may also mean the new things you can do when you have found something out, or the actual doing of new things. This last field is usually called technology.

What is science in your eyes?

reverse: 相反的

[2] I want to discuss these three aspects of science in **reverse** order. I will begin with the new things that you can do—that is, with technology. The most obvious characteristic of science is its application, the fact that as a consequence of science one has a power to do

things. The product of this power is either good or evil, depending on how it is used.

Buddhist: 佛教的

[3] Once in Hawaii I was taken to see a **Buddhist** temple. In the temple a man said, "To every man is given the key to the gates of heaven. The same key opens the gates of hell."

Why does Feynman mention the Buddhist temple? Do you agree that science is a key to both heaven and hell?

[4] And so it is with science. In a way it is a key to the gates of heaven, and the same key opens the gates of hell, and we do not have any instructions as to which is which gate.

[5] Shall we throw away the key and never have a way to enter the gates of heaven? Or shall we struggle with the problem of which is the best way to use the key? That is, of course, a very serious question, but I think that we cannot deny the value of the key to the gates of heaven.

Of the three aspects of science, which one has the closest relation with the society?

According to the author, should scientists be responsible for how scientific findings be utilized in reality?

exaggeration: 夸大,夸张

[6] All the major problems of the relations between society and science lie in this same area. When the scientist is told that he must be more responsible for his effects on society, it is the applications of science that are referred to. If you work to develop nuclear energy you must realize also that it can be used harmfully. Therefore, you would expect that, in a discussion of this kind by a scientist, this would be the most important topic. But I will not talk about it further. I think that to say these are scientific problems is an **exaggeration**. They are far more humanitarian problems. The fact that how to work the power is clear, but how to control it is not, is something not so scientific and is not something that the scientist knows so much about.

Does science serve any practical purpose according to this paragraph?

[7] The next aspect of science is its contents, the things that have been found out. This is the yield. This is the gold. This is the excitement, the pay you get for all the disciplined thinking and hard work. The work is not done for the sake of an application. It is done for the excitement of what is found out. You cannot understand science and its relation to anything else unless you understand and appreciate the great adventure of our time. You do not live in your time unless you understand that this is a tremendous adventure and a wild and exciting thing.

Do you know any "useless" but valuable scientific discoveries?

[8] For instance, the ancients believed that the earth was the back of an elephant that stood on a tortoise that swam in a bottomless sea. The belief of the ancients was the result of imagination. It was a poetic and beautiful idea.

[9] Look at the way we see it today. The world is a spinning

spit: 烤肉叉
whirl: 旋转
gravitation: 地心引力,引力作用
perpetual: 永久的
sway: 摇摆,影响

ball, and people are held on it on all sides, some of them upside down. And we turn like a **spit** in front of a great fire. We **whirl** around the sun. That is more romantic, more exciting. And what holds us? The force of **gravitation**, which is not only a thing of the earth but is the thing that makes the earth round in the first place, holds the sun together and keeps us running around the sun in our **perpetual** attempt to stay away. This gravity holds its **sway** not only on the stars but between the stars; it holds them in the great galaxies for miles and miles in all directions.

What are the similarities between the ancients' imagination and the scientific interpretation in terms of the image of the earth and the universe?

awe inspiring: 令人畏惧的

[10] This universe has been described by many, but it just goes on, with its edge as unknown as the bottom of the bottomless sea of the other idea—just as mysterious, just as **awe inspiring**, and just as incomplete as the poetic pictures that came before.

[11] Or there are the atoms. Beautiful—mile upon mile of one ball after another ball in some repeating pattern in a crystal. Things that look quiet and still, like a glass of water with a covered top that has been sitting for several days, are active all the time; the atoms are leaving the surface, bouncing around inside, and coming back. What looks still to our crude eyes is a wild and dynamic dance.

belch: 喷出
explode: 爆炸
evolve: 发展,进化

[12] And, again, it has been discovered that all the world is made of the same atoms, that the stars are of the same stuff as ourselves. It then becomes a question of where our stuff came from. Not just where did life come from, or where did the earth come from, but where did the stuff of life and of the earth come from? It looks as if it was **belched** from some **exploding** star, much as some of the stars are exploding now. So this piece of dirt waits four and a half billion years and **evolves** and changes, and now a strange creature stands here with instruments and talks to the strange creatures in the audience. What a wonderful world!

What do "this piece of dirt" and " strange creature" refer to respectively?

physiology: 生理学
painstaking: 辛勤的,艰苦的

[13] Or take the **physiology** of human beings. It makes no difference what I talk about. If you look closely enough at anything, you will see that there is nothing more exciting than the truth, the pay dirt of the scientist, discovered by his **painstaking** efforts.

trickery: 欺骗
tightrope: 绷紧的绳索,危险的处境
predict: 预知
quantum mechanical: 量子力学的

[14] Trying to understand the way nature works involves a most terrible test of human reasoning ability. It involves subtle **trickery**, beautiful **tightropes** of logic on which one has to walk in order not to make a mistake in **predicting** what will happen. The **quantum mechanical** and the relativity ideas are examples of this.

[15] The third aspect of my subject is that of science as a

method of finding things out. This method is based on the principle that observation is the judge of whether something is so or not. All other aspects and characteristics of science can be understood directly when we understand that observation is the **ultimate** and final judge of the truth of an idea.

What are the characteristics of scientific work?

ultimate: 最终的,根本的

[16] But "prove" used in this way really means "test," "The exception tests the rule." If there is an exception to any rule, and if it can be proved by observation, that rule is wrong. And it is most exciting, then, to find out what the right rule, if any, is.

Is there any basic principle to be followed in the scientific method?

[17] There are in science a number of technical consequences that follow from the principle of observation as judge. For example, the observation cannot be **rough**. You have to be very careful.

rough: 粗糙的,不完善的

[18] There are a number of special techniques associated with the game of making observations, and much of what is called the philosophy of science is concerned with a discussion of these techniques. The interpretation of a result is an example. To take a **trivial** instance, there is a famous joke about a man who complains to a friend of a mysterious phenomenon. The white horses on his farm eat more than the black horses. He worries about this and cannot understand it, until his friend suggests that maybe he has more white horses than black ones.

To decide whether a rule is valid or not, what shall we look for?

What accounts for the mysterious phenomenon?

trivial: 琐细的,微不足道的

[19] It sounds ridiculous, but think how many times similar mistakes are made in judgments of various kinds. Scientific reasoning requires a certain discipline, and we should try to teach this discipline, because even on the lowest level such errors are unnecessary today.

Why is it ridiculous?

[20] Another important characteristic of science is its objectivity. It is necessary to look at the results of observation objectively, because you, the experimenter, might like one result better than another. You perform the experiment several times, and because of irregularities, like pieces of dirt falling in, the result varies from time to time. You do not have everything under control. You like the result to be a certain way, so the times it comes out that way, you say, "See, it comes out this particular way." The next time you do the experiment it comes out different. Maybe there was a piece of dirt in it the first time, but you ignore it.

How should people approach the result of scientific experiments?

(1423 words)

A Reading Comprehension Check

Choose the best answer from the three options given or fill in the blanks wherever required.

1. Which of the following is NOT included in the definition of science?
   A) Technology
   B) Knowledge
   C) Experiment
2. The aspect of science most known to the general public is its ______________.
3. According to the author, how to use the nuclear power is a ______________ problem, instead of the worry for the scientists.
4. According to the author, scientists do not work for the sake of ______________. Instead, they work for ______________ of finding new things.
5. Why does the author talk about gravitation in Paragraph 9?
   A) To display his knowledge in the field of physics.
   B) To show our present understanding of the universe.
   C) To explain why people can stand upside down on earth.
6. "The other idea" in Paragraph 10 may refer to ______________ in the previous paragraphs.
7. Probably "a strange creature" in the end of Paragraph 12 refers to ______________.
8. The expression "pay dirt" in the end of Paragraph 13 probably refers to ______________.
   A) "the piece of dirt" in Paragraph 12
   B) earth or gravel that is profitable to mine
   C) a useful or profitable discovery or venture

B Reading Afterthoughts

Think of the following questions. If possible, discuss them with your classmates and the instructor.

1. In 1939, on the eve of World War II, Einstein wrote a letter to the American president Franklin Roosevelt. This letter is about the application of his famous equation $E=mc^2$, and his fear that the Nazis would use it to build atomic bombs. His letter set off a chain of events, which led to the destruction of Hiroshima and Nagasaki. Einstein later described writing this letter was one mistake for his life. Explain your view on this issue.
2. The lecture mentioned some characteristics which distinguish the scientific method from other methods. List some other principles scientists should abide by in order to maintain the validity of observation.

PART II READING TIPS

Outlining

Outlining is an important reading skill that helps you actively read and rehearse information you need to recall at a later time. The writings in the field of science and technology are often linear, since the objective is to inform rather than entertain. There is usually a central point, and some supporting points contributing to the main line. There are usually no digressions or repetitions. The supporting points are in the form of elaboration, examples and evidence for that point.

Exercises

Read the text again and complete the outline of the passage.

Main line: What is science?

Science means a special method of finding things out, the body of knowledge arising from the things found out, and the actual doing of new things.

Section 1: Science as the actual doing of new things.

A comparison is made to show that applications are more 1.__________ problems than 2.__________ problems, which scientists do not know much about, and should not be the major concern of scientists.

Section 2: Science as the body of knowledge arising from the things found out.

3.__________ are given to show that the scientific work are done for the excitement of truth discovering, instead of for the sake of 4.__________.

Section 3: Science as a special method of finding things out.

Observation is the ultimate and final judge of the truth of an idea.

Observation should be 5.__________.

PART III FAST READING

Science and Common Sense

Starting time: __________

Common sense is nothing more than a deposit of prejudices laid down by the mind before you reach eighteen.

Albert Einstein

The greatest obstacle to discovery is not ignorance; it is the illusion of knowledge.

Daniel Boorstin

Survival in the ancient world required quick decisions normally made from information stored in the brain (availability heuristic). Once the mind concludes, it resists contrary evidence (confirmation bias). Science addresses these biases and cautions us to reflect on our conclusions.

The shape of the Earth is a clear example of how common sense affects understanding. Those who look down (most primitive cultures) see a flat Earth. Those who look up at the Sun and stars more easily visualize a round Earth. Science is able to integrate these two perspectives.

Common sense dictates that the universe is geocentric. Copernicus proposed heliocentricity. The apparent conflict between authoritative scripture and heliocentricity retarded acceptance of the latter.

Newtonian mechanics are counterintuitive. Most people, including many scientists, accept without fully comprehending, Newtonian mechanics. Understanding Newton, requires overcoming intuitive notions of Aristotelian motion.

Most people think little, or not at all, about the above examples because they've learned the facts without the understanding (tacit knowledge). The examples below are more problematic.

Common sense is surprised that pictures from the moon don't show stars in the sky. The extraordinary dynamic range of the human eye (compared to film) isn't commonly appreciated. The "behavior of flags" on the moon, especially when astronauts touch the flagpole, resembles the behavior of flags in the wind. We have no feel for how flags behave in a vacuum at low gravity. "Moon hoaxers" take advantage of common sense impressions.

Common sense also obscures the second law of thermodynamics which states that, without energy input, disorder increases. Order doesn't spontaneously increase in ordinary life, but we easily forget the weather where energy input creates hurricanes and tornadoes. The Belousov-Zhabotinsky reagent is a yet more striking example of order appearing in unexpected places. The 2nd law neither proves nor rules out biological evolution.

Darwinian evolution constantly battles common sense. The biological world is intuitively discontinuous, time is intuitively local and mechanisms are intuitively deterministic. Analogies to everyday experience are misleading. To Charles Darwin microevolution and geological time were clues to "macroevolution". Intuitive discontinuity, intuitive determinism and apparent conflict with scripture (childhood teaching) obscure Darwin's insight.

The role of peer review in science is to prevent intuitive, but scientifically unsupported, notions from becoming part of science. Because it's imperfect, peer review excludes useful findings. On the other hand anyone who's dealt with diehard conspiracy theorists will readily appreciate the virtues of peer review.

Common sense can even distort the nature of science. Most people are familiar with the legal system and may extrapolate legal methods to the scientific method. Science involves not comparing two sides and picking the best, but rather looking at all sides and designing experiments that distinguish the various models.

History suggests it's perilous to ignore accumulated cultural wisdom.

(494 words)

Finishing time: ____________
Time required: ____________
Time used: ____________
Comprehension: ____________%

Without referring back to the reading article, do the following tasks.

Fill in the blanks or make the best choice with the information you obtained from the reading.

1. In the words of Daniel Boorstin, common sense is equated with ________ while for Albert Einstein, with ________.
2. The bias and conclusions ancient people had established from their common sense may be exemplified by their knowledge about the shape of the earth and the centre of the universe. The former which can be phrased as ________________________ and the latter as ________________________.
3. What is our common sense impression about the behavior of flags on the moon?
   A) Flags would hang limply.
   B) Flags would fly at low gravity.
   C) Flags would appear the same as they are in the vacuum.
4. A discontinuous biological world is the result of ________ observation against the evolutionism advocated by Charles Darwin.

Decide whether the following statements are true (T), or false (F).

5. Despite its imperfection, peer review works effectively against ideas deriving from the common sense. (T / F)
6. The application of our everyday knowledge in the field of science may be inappropriate. (T / F)

Lesson 2

Ignorance and Science

Lesson Tips

人们常说，科学是人类认识世界、改造世界的工具，科学带领人类走出愚昧，消除无知。在 *Ignorance: How It Drives Science* 一书中，哥伦比亚大学生物学家 Stuart Firestein 却提出不同看法。科学和无知究竟是什么关系？本单元的文章详尽介绍了 Stuart Firestein 的观点。

PART I READING: MEANING NEGOTIATION

Read the following text. The reading notes on the margins may be of help to you in your reading process. If you prefer reading the text straight through without referring to these notes, just ignore them. Or you may want to turn to them for better reading comprehension in your re-readings.

How Ignorance Fuels Science and the Evolution of Knowledge

Maria Popova

We judge the value of science by the ignorance it defines.

Stuart Firestein

What does the word "fuels" in the title mean? Can you interpret George Bernard Shaw's comment about science?

[1] "Science is always wrong," George Bernard Shaw famously proclaimed in a **toast** to Albert Einstein. "It never solves a problem without creating 10 more."

toast: 敬酒

[2] In the fifth century BC, long before science as we know it existed, **Socrates**, the very first philosopher, famously observed, "I know one thing, that I know nothing." Some 21 centuries later, while inventing **calculus** in 1687, Sir Isaac Newton likely knew all there was to know in science at the time — a time when it was possible for a single human brain to hold all of mankind's scientific knowledge. Fast-forward 40 generations to today, and the average high school

Socrates: 苏格拉底

calculus: 微积分

How is it possible for an average high school student to know more student has more scientific knowledge than Newton did at the end of his life. But somewhere along that superhighway of progress, we seem to have developed a kind of fact-**fetishism** that **shackles** us to the **allure** of the known and makes us indifferent to the unknown knowable. Yet it's the latter—the unanswered questions—that makes science, and life, interesting. That's the eloquently argued case at the heart of *Ignorance: How It Drives Science*, in which Stuart Firestein sets out to **debunk** the popular idea that knowledge follows ignorance, demonstrating instead that it's the other way around and, in the process, laying out a powerful **manifesto** for getting the public engaged with science—a public to whom, as Neil deGrasse Tyson recently reminded Senate, the government is **accountable** in making the very decisions that shape the course of science.

fetishism: 盲目崇拜
shackle: 束缚,加枷锁
allure: 吸引力,诱惑
debunk: 揭穿,拆穿假面具
manifesto: 宣言,声明
accountable: 应负责的

than a scientist in the past? Does "the unknown knowable" sound paradoxical to you? According to the author, what is the relationship between knowledge and ignorance?

[3] The tools and currencies of our information economy, Firestein points out, are doing little in the way of **fostering** the kind of question-literacy essential to cultivating curiosity:

> *Are we too **enthralled** with the answers these days? Are we afraid of questions, especially those that linger too long? We seem to have come to a phase in civilization marked by a **voracious** appetite for knowledge, in which the growth of information is **exponential** and, perhaps more important, its availability easier and faster than ever.*

foster: 促进,培养
enthrall: 迷住;吸引住
voracious: 狼吞虎咽的,贪婪的
exponential: 指数的,幂数的

Why is the cultivation of curiosity not favoured in this information era?

[4] The **cult** of expertise—whose currency are static answers—obscures the very capacity for cultivating a thirst for ignorance:

> *There are a lot of facts to be known in order to be a professional anything—lawyer, doctor, engineer, accountant, teacher. But with science there is one important difference. The facts serve mainly to access the ignorance... Scientists don't concentrate on what they know, which is considerable but **minuscule**, but rather on what they don't know... Science traffics in ignorance, cultivates it, and is driven by it. **Mucking** about in the unknown is an adventure; doing it for a living is something most scientists consider a privilege.*
>
> *[...]*
>
> *Working scientists don't get **bogged** down in the factual **swamp** because they don't care all that much for facts. It's not that they discount or ignore them, but rather that they don't see*

cult: 狂热崇拜,风靡一时
minuscule: 非常小
muck: 闲逛
bog: 使陷于泥沼
swamp: 沼泽,湿地

What does the word "currency" mean here?

What are the negative effects of the obsession of expertise? How do scientists approach what they know and what they don't?

To what are facts likened? What attitude do scientists hold towards facts?

them as an end in themselves. They don't stop at the facts; they begin there, right beyond the facts, where the facts run out. Facts are selected, by a process that is a kind of controlled neglect, for the questions they create, for the ignorance they point to.

[6] Firestein, who chairs the Department of Biological Sciences at Columbia University, stresses that beyond simply accumulating facts, scientists use them as raw material, not finished product. He cautions:

*Understanding the raw material for the product is a subtle error but one that can have surprisingly **far-reaching** consequences. Understanding this error and its **ramifications**, and setting it straight, is crucial to understanding science.*

What emerges is an elegant definition of science:

*Real science is a revision in progress, always. It **proceeds in fits and starts** of ignorance.*

[7] What is true of science is actually also true of all creativity: As Jonah Lehrer puts it, "The only way to be creative over time — to not be undone by our expertise — is to experiment with ignorance, to stare at things we don't fully understand." Einstein knew that, too, when he noted that without a **preoccupation** with "the **eternally unattainable** in the field of art and scientific research, life would have seemed... empty." And Kathryn Schulz touched on it with her **meditation** on pessimistic **meta-induction**.

[8] In highlighting this **commonality** science holds with other domains of creative and intellectual labor, Firestein turns to the poet John Keats, who described the ideal state of the literary **psyche** as Negative Capability—"that is when a man is capable of being in uncertainties, mysteries, doubts without any **irritable** reaching after fact & reason." Firestein translates this to science:

*Being a scientist requires having faith in uncertainty, finding pleasure in mystery, and learning to cultivate doubt. There is no surer way to **screw up** an experiment than to be certain of its outcome.*

He captures the heart of this argument in an eloquent metaphor:

far-reaching: 深远的
ramification: 问题、计划或陈述的发展或由其所造成的后果
proceed: 进行，继续下去，发生
in fits and starts: 一阵阵地，间歇地
preoccupation: 注意力或心智的专注
eternally: 永恒地
unattainable: 难到达的，做不到的
meditation: 沉思
meta-induction: 元归纳
commonality: 共性
psyche: 心智，灵魂
irritable: 易怒的，性急的
screw up: 弄糟

How do you understand "science proceeds in fits and starts of ignorance"?

What is meant by "undone by our expertise"?

What does "Negative Capability" refer to here?

According to the author, what is most harmful to a scientific

Science, then, is not like the onion in the often used ***analogy*** *of stripping away layer after layer to get at some core, central, fundamental truth. Rather it's like the magic well no matter how many buckets of water you remove, there's always another one to be had. Or even better, it's like the widening* ***ripples*** *on the surface of a pond, the ever larger* ***circumference*** *in touch with more and more of what's outside the circle, the unknown. This growing* ***forefront*** *is where science occurs... It is a mistake to* ***bob*** *around in the circle of facts instead of riding the wave to the great expanse lying outside the circle.*

[9] However, more important than the limits of our knowledge, Firestein is careful to point out, are the limits to our ignorance. Science historian and Stanford professor Robert Proctor has even **coined** a term for the study of ignorance—agnotology—and, Firestein argues, it is a **conduit** to better understanding progress.

[10] Science historian and philosopher Nicholas Rescher has offered a different term for a similar concept: *Copernican cognitivism*, suggesting that just like ***Copernicus*** showed us there was nothing **privileged** about our position in space by debunking the **geocentric** model of the universe, there is also nothing privileged about our cognitive landscape.

[11] But the most memorable **articulation** of the limits of our own ignorance comes from the Victorian **novella** *Flatland*, where a three-dimensional **sphere** shows up in a two-dimensional land and **inadvertently wreaks havoc** on its geometric inhabitants' most basic beliefs about the world as they struggle to imagine the very possibility of a third dimension.

[12] An engagement with the **interplay** of ignorance and knowledge, the essential **bargaining chips** of science, is what **elevated** modern civilization from the intellectual flatness of the Middle Ages. Firestein points out that "the public's direct experience of the empirical methods of science" helped humanity evolve from the magical and mystical thinking of Western medieval thought to the rational **discourse** of **contemporary** culture.

[13] At the same time, Firestein **laments**, science today is often "as **inaccessible** to the public as if it were written in classical Latin." Making it more accessible, he argues, **necessitates** introducing explanations of science that focus on the unknown as an entry point—

analogy: 类似，类推
ripple: 涟漪
circumference: 圆周，周围
forefront: 最前部
bob: 上下漂动
coin: 设计(新单词或短语)
conduit: 管道，导管
Copernicus: 哥白尼
privilege: 给予……特权，特别待遇
geocentric: 以地球为中心的
articulation: 表达
novella: 短篇故事
sphere: 球，球体
inadvertently: 非故意地
wreak havoc: 带来灾难
interplay: 相互影响
bargaining chip: 谈判筹码
elevate: 举起，提拔
discourse: 推理能力
contemporary: 当代的
lament: 痛惜
inaccessible: 达不到的，难以接近
necessitate: 使成为必需

experiment?

What is the implication of "riding the wave to the great expanse lying outside the circle"?

Why does the author mention Robert Proctor?

What makes the two concepts — our position in space and our cognitive landscape comparable?

Then what is the limit of our ignorance according to Flatland?

What characterizes thinking in the Middle Ages?

What makes modern science inaccessible to the public according to Firestein?