托福听力 tpo51 全套对话讲座原文+题目+答案+译文

Section 1

Conversation1

原文

NARRATOR: Listen to part of a conversation between a student and her biology professor.

MALE PROFESSOR: So the assignment is to reproduce one of the animal camouflage experiments we read about in our text book. Which experiment did you pick?

FEMALE STUDENT: Well... I was wondering if I could try to reproduce an experiment that's kinda the opposite of what was discussed in the textbook?

MALE PROFESSOR: So, instead of how and why an animal might hide itself, you want to do something about why an animal might want to be seen? Hmmm. Tell me more.

FEMALE STUDENT: Well, I got the idea from one of the journals you said we should look at…it's an experiment about, um, they called them eyespots in the article?

MALE PROFESSOR: Eyespots, sure, the patterns on the wings of moths and butterflies that are generally believed to scare off predators because they look like big eyes.

FEMALE STUDENT: Yeah, except the article was about an experiment that disputes that theory.

MALE PROFESSOR: Well, we know that the markings do scare the birds, but the idea that the spots look like eyes is, well that's just a commonly held belief.

FEMALE STUDENT: So—that's not even based on research?

MALE PROFESSOR: Well, this whole idea of moth or butterfly markings being scary because they look like eyes rests on how we imagine that their predators—like birds—perceive the markings. And we can never really know that. All we can do is observe bird behavior. But tell me more about the experiment.

FEMALE STUDENT: OK, so the experiment looked at the shapes of the markings on moth wings. The researchers wanted to know if the markings that were round or eye-shaped were more effective at deterring predators than square or rectangular markings.

MALE PROFESSOR: OK…

FEMALE STUDENT: Yeah. So, they attached food to paper models of moths, with different shaped marks drawn on the wings, to see how birds reacted. And what's interesting is, they realized that the round marks were not more effective at scaring birds than other shapes.

MALE PROFESSOR: Were they less effective?

FEMALE STUDENT: No, they were about the same... but what researchers did determine is that larger markings are more effective than smaller markings at scaring off prey. They called this phenomenon “visual loudness.”

MALE PROFESSOR: Visual loudness, huh. Well, I guess it's not all that shocking, if you think about it.

FEMALE STUDENT: So, anyway, is it OK? Can I repeat this experiment and write about it?

MALE PROFESSOR: Yes, I think that'll work. The problem I foresee is, well, where? This is an urban campus...You'll have a hard time finding a good place to set up the experiment.

FEMALE STUDENT: Oh, I-I wasn't planning on doing it on campus. I'm going home for spring break, and my family lives in the country, far from the nearest city. I can set it up in the backyard.

MALE PROFESSOR: Good idea. Except one week is not a lot of time. So you'll need to make some adjustments to have enough data. I'd set up the experiment near a bird feeder, and get in as much observation time as you can.

题目

1.Why does the student talk with the professor?

A. She wants permission to revise an experiment that she conducted earlier.

B. She has a question about the findings of an experiment in the textbook.

C. She wants to reproduce an experiment that is not in the textbook.

D. She would like some advice about how to study butterfly and moth behavior.

2.What does the professor say is a common assumption about certain markings on butterfly and moth wings?

A. That the markings are usually hidden from view

B. That the markings attract some kinds of birds more than others

C. That some birds perceive the markings as large eyes

D. That butterflies and moths use the markings to attract mates

3.What were the results of the experiment that the student describes? [Click on 2 answers.]

A. Birds reacted to round markings the same way they reacted to square markings.

B. Large markings scared birds more than small markings did.

C. Most birds ignored markings that looked like eyes.

D. Birds were attracted to more colorful markings.

4.Why does the professor mention a bird feeder?

A. To suggest a strategy that may help the student carry out her task successfully

B. To recommend a place on campus that is suitable for the student's project

C. To discuss another experiment that has yielded surprising results

D. To point out a problem in the design of the original experiment

5.What can be inferred about the student when she says this:

Professor: Well, we know that the markings do scare the birds but the idea that the spots looked like eyes is……well, that is just a commonly held belief.

Student: So, that’s not even based on research?

A. She is skeptical about what the professor just told her.

B. She just realized that she designed her experiment incorrectly.

C. She is worried that she misunderstood something that she read.

D. She had assumed that there was scientific evidence for the theory.

答案

C　C　AB　A　D

译文

旁白：请听一段学生和其生物学教授之间的对话。

教授：所以，我们的作业就是来重复课本上动物伪装的实验之一。你选择哪个实验呢？

学生：嗯，我在想我可不可以去重复一个实验……一个和课本上的实验相反的实验呢？

教授：所以你想去做一个为什么动物会有意暴露自己的实验，而不是一个动物如

何及为什么伪装自己的实验？嗯？多说一点。

学生：嗯，我是从你推荐我们阅读的期刊上获得这个想法的。这是一项关于……关于期刊上他们口中所说的眼睛昆虫的实验？

教授：眼睛昆虫，当然，飞蛾和蝴蝶身上的图案通常会被认为可以吓退捕食者，因为它们看起来像是大大的眼睛？

学生：是的。不过这篇文章是关于一项反驳这个理论的实验的。

教授：嗯，我们知道，这些图案确实会吓退鸟类，但是这些图案看起来像眼睛的观点实际上……实际上只是个被人们广泛认同的观点而已。

学生：所以，这个观点甚至不是基于研究而来的？

教授：嗯，蛾子和蝴蝶身上的图案因为像眼睛而使人害怕这整个观点，其实是基于我们对于捕食者，比如鸟类会如何感知这些图案的想象的。我们永远不能真正地验证这个观点。我们所有可以做的事情是去观察鸟类的行为。但是你现在多给我讲讲这个实验吧。

学生：好的。杂志上说这个实验围绕着蛾子翅膀上图案的形状展开的。研究者想知道，圆形和眼睛形状的图案是不是在吓退捕食者的时候比正方形和矩形的图案更加有效。

教授：好的。

学生：是的。所以他们把食物和纸质的蛾子模型放在一起，蛾子模型的翅膀上画着不同形状的图案，然后观察鸟类如何对此作出反应。有趣的是，他们发现，圆形图案并没有在吓退鸟类上比别的形状的图案更加有效。

教授：圆形图案效果更差吗？

学生：不，它们效果差不多，但是研究者可以确定的是大的图案比小的图案在吓退鸟类的时候更有效果。他们把这个现象称为“视觉响度”。

教授：视觉响度。嗯。我觉得你仔细想想以后会觉得这个实验也不是那么令人震惊。

学生：所以无论如何，这个实验可以吗？我可以重复这个实验，然后写一份和它有关的作业吗？

教授：是的，我觉得可以。问题是……嗯…..你在哪里做这个实验？我们这里是城里的大学，你想找一个适合做这个实验的地方可能会很困难。

学生：哦，我没有打算在大学里做。我春假要回家，我家住在乡村地区，离最近的城市很远。我可以在后院里做这个实验。

教授：好主意。但是一周的春假时间并不长，所以你需要对实验做一些改动，以得到足够的数据。我建议把实验地点设置在鸟食器附近，然后争取尽可能多的观察鸟类的时间。

Lecture1

原文

NARRATOR: Listen to part of a lecture in a botany class.

FEMALE PROFESSOR: So, continuing with crop domestication, and corn—or, um, maize, as it's often called. Obviously it's one of the world's most important crops today. It's such a big part of the diet in so many countries, and it's got so many different uses, that it's hard to imagine a world without it. But because it doesn't grow naturally, without human cultivation, and because there's no obvious wild relative of maize… uh, well, for the longest time, researchers weren't able to find any clear link between maize and other living plants. And that's made it hard for them to trace the history of maize.

Now, scientific theories about the origins of maize first started coming out in the 1930s. One involved a plant called teosinte. Teosinte is a tall grass that grows wild in certain parts of Mexico and Guatemala. When researchers first started looking at wild teosinte plants, they thought there was a chance that the two plants—um, maize and teosinte—were related. The young wild teosinte plant looks a lot like the corn plant, and the plants continue to resemble each other—at least superficially—even when they're developed.

But when the scientists examined the fruits of the two plants, it was a different story. When you look at ripe corn, you see row upon row of juicy kernels… um, all those tiny little yellow squares that people eat. Fully grown teosinte, on the other hand, has a skinny stalk that holds only a dozen or so kernels behind a hard, um, almost stonelike casing. In fact, based on the appearance of its fruit, teosinte was initially considered to be a closer relative to rice than to maize.

But there was one geneticist, named George Beadle, who didn't give up so easily on the idea that teosinte might be… well… the “parent” of corn.While still a student in the 1930s, Beadle actually found that the two plants had very similar chromosomes—very similar genetic information. In fact, he was even able to make fertile hybrids between the two plants. In hybridization, you remember, the genes of two species of plants are mixed to produce a new, third plant—a hybrid. And if this offspring—this hybrid—is fertile, then that suggests that the two species are closely related genetically. This new, hybrid plant looked like an intermediate, right between maize and teosinte. So, Beadle concluded that maize must've been developed over many years, uh, that it is a domesticated form of teosinte.Many experts in the scientific community, however, remained unconvinced by his conclusions. They believed that, with so many apparent differences between the two plants, it would have been unlikely that ancient—that prehistoric peoples could’ve domesticated maize from teosinte. I mean, when you think about it, these people lived in small groups, and they had to be on the move constantly as the seasons changed. So for them to selectively breed, to have the patience to be able to pick out just the right plants… and gradually—over generations—separate out the durable, nutritious maize plant from the brittle teosinte that easily broke apart… it's a pretty impressive feat,

and you can easily see why so many experts would have been skeptical.But, as it turns out, Beadle found even more evidence for his theory when he continued his experiments, producing new hybrids, to investigate the genetic relationship between teosinte and maize. Through these successive experiments, he calculated that only about five specific genes were responsible for the main differences between teosinte and maize—the plants were otherwise surprisingly similar genetically.

And more recently, botanists have used modern DNA testing to scan plant samples collected from throughout the Western Hemisphere. This has allowed them to pinpoint where the domestication of maize most likely took place— and their research took them to a particular river valley in southern Mexico. They've also been able to estimate that the domestication of maize most likely occurred about 9,000 years ago. And subsequent archaeological digs have confirmed this estimate. In one site, archaeologists uncovered a set of tools that were nearly 9,000 years old. And these tools were covered with a dusty residue… a residue of maize, as it turns out…thus making them the oldest physical evidence of maize that we've found so far.

题目

1.What is the lecture mainly about?

A. A research study that compares wild and domesticated plants

B. Problems with a commonly held hypothesis about the origin of teosinte

C. Reasons why wild plants are usually unsuitable for agriculture

D. The process used to identify the ancestor of a modern crop

2.What evidence seemed to indicate that maize and teosinte are not related?

A. Young teosinte plants do not physically resemble young maize plants.

B. Preliminary DNA evidence indicated that teosinte was related to rice.

C. Maize and teosinte usually grow in significantly different climates.

D. Maize and teosinte have very different types of kernels.

3.Why does the professor discuss hybrids?

A. To explain how a geneticist confirmed that maize was widely grown 9,000 years ago

B. To indicate the earliest method used by geneticists to identify plant origins

C. To explain a method used to demonstrate a link between two plant species

D. To describe how geneticists distinguish between wild plants and domesticated plants

4.What was most researchers' initial view of George Beadle's theory about teosinte?

A. They accepted it but questioned the evidence cited.

B. They rejected it because of conflicting archaeological evidence.

C. They questioned it because it implies that ancient farmers were sophisticated plant breeders.

D. They questioned it because genetic research was viewed with skepticism at that time.

5.What did Beadle conclude about maize and teosinte?

A. Both plants lack particular genes that are common in most domesticated plants.

B. Both plants have particular genes that enable them to adapt to varying climates.

C. Only a small number of genes are responsible for the differences between the two plants.

D. The genetic composition of both plants is very similar to that of rice.

6.According to the professor, why was the discovery of stone tools important?

A. It proved that teosinte was simultaneously domesticated in multiple locations.

B. It helped to confirm the period in which maize was first domesticated.

C. It suggested that maize required farming techniques that were more complex than experts had previously assumed.

D. It provided evidence that maize plants were used for more purposes than experts had previously assumed.

答案

D　D　C　C　C　B

译文

旁白：请听一段植物学讲座的节选。

教授:我们继续讲作物驯化，玉米，或者说，嗯，我们经常叫它玉米，显然它是现在世界上最重要的作物之一。很多国家的饮食构成中它都占有大比重，它的用途多样，我们很难想象没有玉米的世界。但是因为玉米不是自然长成的，必须要有人类的有意栽培，而且因为玉米并没有什么显而易见的野生的亲属，嗯，所以很长时间研究者都找不到任何玉米和其他植物的清楚联系。这就使得他们很难追溯玉米的历史。

关于玉米起源的科学理论第一次出现在20世纪30年代，这个理论涉及到一种叫

做大刍草的植物。大刍草是一种高高的草，生长在墨西哥和危地马拉的某些地区。当研究者第一次看到野生的大刍草的时候，他们认为玉米和大刍草有可能会有关系。年幼的野生大刍草长得和玉米很像。它们以后也是长得相像的，至少表面上相似，即使是它们长大以后。

但是当科学家检查这两种植物的果实的时候，出现了很大的不同。当你看玉米的时候，你可以看到一串串多汁的谷粒，嗯，就是所有这些人们可以吃的小小的黄色小粒粒。然而完全长成的大刍草则用薄薄的枝干包裹着仅仅数十粒左右的谷物，谷物外面还套着一层石头一样硬的壳。实际上，根据它谷粒的外观，大刍草一开始是被认为是稻谷的近亲，而不是玉米的近亲。

但是有一个遗传学者，叫做 George Beadle，他没有轻易放弃大刍草可能是玉米亲本的观点。在 20 世纪 30 年代，当他还是个学生的时候，Beadle 实际上发现了这两种植物有非常相似的染色体，非常相似的基因信息。实际上，他已经可以获得这两种植物的可育杂种植株。在我们讲杂交的时候，你们应该记得，也就是两种植物的基因杂交得到第三种全新的植物，就是杂种植株。如果这个后代，这个杂种植物是可育的，那就意味着这两种物种在基因上是紧密联系的。这种新的杂交植株看起来是玉米和大刍草的一种中间形态。所以 Beadle 得出结论说，玉米必须经过很多年才能培育出来，它是大刍草的驯化形态。然而很多科学家对于这个结论还是不怎么相信。他们相信这两种植物之间有那么多的明显的区别，古代的、史前的人们不大可能把大刍草驯化成玉米。我的意思是，当你仔细想这件事的时候，这些古代人居住在小小的群落里，随着季节变化他们要不停地迁徙。所以对于他们来说，进行选择性培育，耐心地挑出来所有可以继续培育下去的植株，并一代代培育下去，从很容易支离破碎的大刍草植株里分离出持久而有营养的玉米植株，这是一项非常令人震惊的成绩。

你可以很容易地明白为什么这么多的专家一直对此抱有怀疑。但是就像结果所说明的那样，Beadle 在继续实验的时候发现了甚至更多的支持他的理论的证据，他继续去培育新的杂交植株，来探索大刍草和玉米之间的基因关系。通过这些成功的实验，他计算出只有大约五个基因会导致大刍草和玉米之间的主要差异，而两者其余的基因则表现出了令人惊讶的相似性。

在距离我们更近的时期，植物学家使用了现代的基因检测来扫描从西半球收集到的植株样本。这就让他们可以发现到底是哪片区域的人最先开始对于大刍草的驯化的。他们的研究让他们发现了位于南墨西哥的一处河谷。他们同样可以估计出对玉米的驯化大约开始于 9000 年之前。后续的考古学挖掘肯定了这里对年份的估计。在一处地点，一些考古学家发现了一套 9000 多岁的工具。这一些工具是被满是灰尘的残渣所覆盖的，这些残渣被发现是玉米的残渣。这就使得它们成为了至今为止我们所发现的最古老的玉米的实物证据。

Lecture2

原文

NARRATOR: Listen to part of a lecture in a world history class.

FEMALE PROFESSOR: So, one of the more common topics that comes up in world history, because it's had a pretty dramatic effect on how different societies evolve over long periods of time, is cultural diffusion.Now…cultural diffusion is generally defined as the transmission of culture from one society to another,and by culture, we mean anything from artistic styles to, uh… you know… technology, science…so, we use “culture” very broadly. A common means of this process taking place is trade…traveling merchants, or trading hubs, places where people from various areas all come together and ideas get exchanged.

Let's start with the example of the transmission of a number system—a system that used the number zero—from South Asia into Western Europe.OK, so before this cultural diffusion happened, the dominant number system in Western Europe was the Roman numeral system. The Roman numeral system developed primarily as a means of record keeping, as a way to keep track of commercial transactions, uh, taxes, census records, things of that sort. As a consequence, this system started with the number one.

FEMALE STUDENT: With one? Not with zero?

FEMALE PROFESSOR: Right. See, in Roman numerals, zero isn't really a value in and of itself. It wasn’t used independently as a number on its own. If your primary concern's just basic types of record keeping…

FEMALE STUDENT: Oh, yeah, I guess you wouldn't need a zero to count livestock.

FEMALE PROFESSOR: Or to keep track of grain production, or do a census. And it wasn't an impediment as far as sort of basic engineering was concerned, either—um, to their ability to construct buildings, roads, stuff like that.

But other number systems developed in Asia, systems that do incorporate zero. The mathematics these societies developed included things like negative numbers, so you start to get more sophisticated levels of mathematics.So… one of the earliest written texts of mathematics that has zero, negative numbers, even some sort of basic algebra, is written in South Asia in the early seventh century. This text makes its way into the Middle East, to Baghdad, and is eventually translated into Arabic by a Persian astronomer and mathematician. Once he begins his translation, he quickly realizes the advantages of this system, the types of math that can be done. Soon the text begins to be more widely circulated through the Middle East, and other mathematicians start to advocate using this number system.

So, by the tenth century, it's the dominant system in the Middle East and as a consequence, algebra and other more sophisticated forms of mathematics start to flourish.Meanwhile, in Western Europe, the Roman numeral system, a system without zero, was still in place.

In the late twelfth century, an Italian mathematician named Fibonacci was traveling in North Africa along with his father, a merchant. And while he's there, Fibonacci discovers this Arabic text. He translates the… uh, the text into Latin and returns to Europe. And he promotes the adoption of this number system because of the advantages in recording commercial transactions, calculating interest, things of that nature. Within the next century and a half, that becomes the accepted, dominant number system in Western Europe.

Any questions? Robert?

MALE STUDENT: Um, this Fibonacci—is he the same guy who invented that… uh, that series of numbers?

FEMALE PROFESSOR: Ah, yes, the famous Fibonacci sequence. Although he didn't actually invent it—it was just an example that had been used in the original text… I mean, can you imagine—introducing the concept of zero to Western Europe, this is what you go down in history for?

Carol?

FEMALE STUDENT: So… do we see, like, an actual change in everyday life in Europe after the zero comes in, or is it really just…

FEMALE PROFESSOR: Well, where the change takes place is in the development of sciences.

FEMALE STUDENT: Oh.

FEMALE PROFESSOR: Even in basic engineering, it isn't a radical change. Um, but as you start to get into, again, the theoretical sciences, uh, higher forms of mathematics… calculus… zero had a much bigger influence in their development.OK, now note that, as cultural diffusion goes, this was a relatively slow instance. Some things tend to spread much quicker, um, for example, artistic or architectural styles, such as domes used in architecture. We see evidence of that being diffused relatively quickly, from Rome to the Middle East to South Asia…

题目

1.What does the professor mainly discuss?

A. The advantages and disadvantages of the Roman numeral system

B. The importance of the number zero in tracking commercial transactions

C. How a new number system affected trade

D. How a number system spread from one society to another

2.What does the professor imply about the record-keeping methods used by early Western Europeans?

A. They led directly to advances in basic engineering.

B. They required an understanding of elementary algebra.

C. They did not require a counting system that included the number zero.

D. They were more sophisticated than those used in the Middle East.

3.What role did the Italian mathematician Fibonacci play in the example of cultural diffusion that the professor describes?

A. He introduced a text in Europe that he had translated from Arabic.

B. He was the first to use the number zero in higher-level mathematics.

C. He encouraged the use of a new number system in tracking grain production.

D. He translated an Italian text into Arabic during his travels through the Middle East.

4.What is the professor's opinion about the effects of the new number system on European society?

A. Its most important effects were on merchants and tradespeople.

B. It had little impact on daily life.

C. It affected engineers more than other scientists.

D. It quickly caused most people's lives to change radically.

5.What can be inferred about the professor when she says this:

Professor:Ah……yes. The famous Fibonacci sequence. Although he didn't actually invent it, it was just an example that have been used in your original text. I mean, can you imagine? Introducing the concept of Zero to Western Europe? And this is what you go down in history for?

A. She wants the students to appreciate the mathematical significance of the Fibonacci sequence.

B. She believes that Fibonacci's contributions to mathematics were unoriginal.

C. She is impressed by the breadth of Fibonacci's genius.

D. She is surprised at the reason that Fibonacci is primarily remembered today.

6.Why does the professor mention domes in architecture?

A. To point out a style of architecture that was not spread by traveling merchants

B. To emphasize that the speed at which cultural diffusion occurs can vary widely

C. To give an example of a type of engineering that is only possible with the use of zero

D. To explain that domes were invented in Asia but were more popular in Rome

答案

D C A B D B

译文

旁白：请听一段世界史讲座的节选片段。

教授：所以世界史上最普遍的话题之一就是文化扩散，因为其对于不同的社会是怎么在漫长时期中进化的具有相当重大的作用。现在，文化扩散通常会被定义成社会与社会之间的文化传递。所以我们这里所指的文化其实是个很广泛的概念。这个过程发生的方式之一就是交易，商人奔走交易或者通过贸易中心，不同地区的人在贸易中心聚集到一起，他们的思想得以交流。我们从计数系统传播的例子讲起，这个系统是使用数字 0 的，它从南亚传到了西欧。好的，所以在文化扩散发生之前，在西欧占据统治地位的计数系统是罗马计数系统。罗马计数系统最初是作为一个做记录的方式被发明出来的，是一种记录商业交易，嗯，税收，统计结果的方式，就是记录这一类东西的。结果就是，这个计数系统是从 1 开始的。

学生：从 1 开始？不是从 0 开始吗？

教授：是的。你看在罗马数字系统里，数字 0 本身并不是一个数值。它不能独立使用。如果你一开始只是想做几种基础的记录的话……

学生：哦，是的。我猜并不需要数字 0 去计数家畜。

教授：也不需要用它来记录谷物产量或者统计结果。直到人们开始考虑一些关于基础工程学的事情，嗯，也就是去建造建筑、修路这种事情之前，没有 0 并不会造成任何阻碍。

但是其他在亚洲被发明的计数系统确实包含了 0。这些社会研究出来的数学成果还包含了负数之类的东西，所以这就开始达到更加复杂的数学水平。所以关于子数学，即包含了 0、负数甚至一些基础代数学的最早书面记录在公元 7 世纪早期产生于南亚。这个文字记录被传到了中东，巴格达，它最后由一个波斯天文学家和数学家翻译成阿拉伯语。在他开始翻译的时候，他很快就意识到这个计数系统的优越性，及其可以完成的数学运算。很快，这篇文章经中东广为流传，另一些

数学家开始提倡使用这一个计数系统。

所以到公元10世纪的时候，这个计数系统已经在中东占据了统治地位。其结果就是，代数学及其他更加复杂的数学形式开始繁荣发展。同时，在西欧，不包含0的罗马计数系统依旧被使用着。

在公元12世纪末期，一位名为斐波那契的意大利数学家同他的父亲，一位商人，在北非旅行。他在那里发现了这篇阿拉伯语的文章。他把这篇文章翻译成了拉丁语，然后回到了欧洲。因为这个计数系统在记录贸易往来、计算利润之类的事情上面具有优越性，他开始推广这个计数系统。在接下来的一个半世纪内，这个计数系统变成了在西欧被广泛接受的占据优势地位的计数系统。有问题吗？罗伯特？

罗伯特：嗯，这个斐波那契，他是发明那个……嗯……那个数列的人吗？

教授：啊……是的。著名的斐波那契数列。尽管实际上不是他发明的，它只是一个被用在你们课本上的例子而已。我的意思是，你们可以想象吗？把0引入西欧？而这就是他被写进历史书的原因？卡洛？

卡洛：所以在0被引进欧洲以后，我们有感受到切实的日常生活的改变吗？或者他们仅仅是……

教授：改变是发生在科学发展的进程中的。

卡洛：哦。

教授：甚至是在基础工程学里。这不是一个根本的变化。但是如果你们逐渐开始了解理论科学时，啊，更高深的数学，微积分的时候，0就在它们的发展中起到了重要得多的影响。好的，现在你们要知道，随着文化扩散的进行，这其实是一个相对缓慢的例子。有的事物就传播得快多了，嗯，例如说，艺术，或者建筑风格，比如说圆顶在建筑中的使用。我们可以看到圆顶相对快速地从罗马传播到中东再到南亚的证据……