

新托福突破口 TPO (1-33+纸质版 4、5) 综合作文阅读、听力原文 (文本) 全集+满分范文

综合写作是作文部分，必不可少的一部分。但是在此之前，我们很多考友都将这一部分给忽略了，我们总是将独立作文放在了第一位，但是实际上，综合作文也是占到了作文总分 30 分里面的 50%的分值。我们很多考友都是在分数出来之后，才发现综合作文的 limited 或者 fair 极大的影响了自己的分数。

其实我们之所以综合作文分数不高，很大程度上是受我们的听力实力的影响，换句话说，当我们很多考友的听力分数只有 15 分上下的时候，我们对于综合作文的听力妥妥的是束手无策，而且很多考友还感觉自己都听懂了，那也只能说明你听懂了大意，但是听力里面要的是每一个细节！请注意，是每一个细节！

因此，你就需要今天的，《新托福突破口 TPO (1-33+纸质版 4、5) 综合作文阅读、听力原文 (文本) 全集+满分范文》包含 2 个部分，分别是 TPO1-30 综合作文部分的阅读和听力文本全集，与 1 篇综合作文的满分作文，以及满分作文的解析。力图给各位考友一个写作的目标，也就是给自己一个提高的方向。毕竟，如果自己的综合作文分数如果可以很给力的话，就已经搞定了 15 分的分数，可以极大地缓解独立作文的压力。至于很多考友不知道纸质版 TPO 为何物，其实很简答，纸质版 TPO 就是 ETS 在中国大陆出版的一本真题集，一共只有 5 套，前 3 套与 TPO 现有的内容重复，但是第四套和第五套是全新的试题。每每提到的纸质版 4、5 套就指的是这两套题。

那么如何使用这个文件呢？

首先，就是在自己做模考之后，可以根据这里的听力的文本，来检验自己的听力内容是否抓的足够好，尤其是要看写的够不够全！很多时候，我们的综合作文之所以分低，就是因为听力写的不全！

第二点，也可以用于很多考友在考前来做跟读，因为很多考友，都是在感叹自己的口语实力不够，那么做跟读，仔细地来模仿 ETS 官方素材，是一个很好的提升自己口语的方式。毕竟口语最终考的，是口语本身说的是否足够流畅，要想在考试的时候说的很流畅，就是要在平时张口多说，只有多说，我们才能够做到足够的流利。

第三点，熟悉托福考试的专业词汇。因为很多考友现在之所以在听力考试里面不够给力，是因为对于里面的专业词汇不够熟悉。毕竟在考试的时候，如果核心词汇都不懂的话，那么在听力部分只能是束手就擒了。因此，各位考友可以通过这份材料，来熟悉托福作文之中的专业词汇。

注意：按住 Ctrl，并且鼠标左键单击下面的链接，可以直达该页。

TPO1.....	4
TPO2.....	6
TPO3.....	8
TPO4.....	10
TPO 5.....	12
TPO6.....	14
TPO7.....	16
TPO8.....	18
TPO9.....	20
TPO10.....	22
TPO11.....	24
TPO12.....	26
TPO13.....	28
TPO14.....	30
TPO15.....	32
TPO16.....	34
TPO17.....	36
TPO18.....	38
TPO19.....	40
TPO20.....	42
TPO21.....	44
TPO22.....	46
TPO23.....	48
TPO24.....	50
TP025.....	52
TP026.....	53
TP027.....	55
TP028.....	56

TPO29.....	57
TPO30.....	58
TPO 31.....	59
TPO 32.....	61
TPO 33.....	62
纸质版 TPO4.....	63
纸质版 TPO5.....	64



TPO1

Reading

In the United States, employees typically work five days a week for eight hours each day. However, many employees want to work a four-day week and are willing to accept less pay in order to do so. A mandatory policy requiring companies to offer their employees the option of working a four-day workweek for four-fifths (80 percent) of their normal pay would benefit the economy as a whole as well as the individual companies and the employees who decided to take the option. The shortened workweek would increase company profits because employees would feel more rested and alert, and as a result, they would make fewer costly errors in their work. Hiring more staff to ensure that the same amount of work would be accomplished would not result in additional payroll costs because four-day employees would only be paid 80 percent of the normal rate. In the end, companies would have fewer overworked and error-prone employees for the same money, which would increase company profits. For the country as a whole, one of the primary benefits of offering this option to employees is that it would reduce unemployment rates. If many full-time employees started working fewer hours, some of their workload would have to be shifted to others. Thus, for every four employees who went on an 80 percent week, a new employee could be hired at the 80 percent rate. Finally, the option of a four-day workweek would be better for individual employees. Employees who could afford a lower salary in exchange for more free time could improve the quality of their lives by spending the extra time with their families, pursuing private interests, or enjoying leisure activities.

Listening

Professor

Offering employees the option of a four-day workweek won't affect the company profits, economic conditions or the lives of employees in the ways the reading suggests.

First, offering a four-day workweek will probably force companies to spend more, possibly a lot more. Adding new workers means putting much more money into providing training and medical benefits. Remember the costs of things like health benefits can be the same whether an employee works four days or five. And having more employees also requires more office space and more computers. These additional costs would quickly cut into company profits.

Second, with respect to overall employment, it doesn't follow that once some employees choose a four-day workweek, many more jobs will become available. Hiring new workers is costly, as I argued a moment ago. And companies have other options. They might just choose to ask their employees to work overtime to make up the difference. Worse, companies might raise expectations. They might start to expect that their four-day employees can do the same amount of work they used to do in five days. If this happens, then no additional jobs will be created and current jobs will become more unpleasant.

Finally, while a four-day workweek offers employees more free time to invest in their personal lives, it also presents some risks that could end up reducing their quality of life. Working a shorter week can decrease employees' job stability and harm their chances for advancing their careers. Four-day employees are likely to be the first to lose their jobs during an economic downturn. They may also be passed over for promotions because companies might prefer to have five-day employees in management positions to ensure continuous coverage and consistent supervision for the entire workweek.

TPO2

Reading

In many organizations, perhaps the best way to approach certain new projects is to assemble a group of people into a team. Having a team of people attack a project offers several advantages. First of all, a group of people has a wider range of knowledge, expertise, and skills than any single individual is likely to possess. Also, because of the numbers of people involved and the greater resources they possess, a group can work more quickly in response to the task assigned to it and can come up with highly creative solutions to problems and issues. Sometimes these creative solutions come about because a group is more likely to make risky decisions that an individual might not undertake. This is because the group spreads responsibility for a decision to all the members and thus no single individual can be held accountable if the decision turns out to be wrong.

Taking part in a group process can be very rewarding for members of the team. Team members who have a voice in making a decision will no doubt feel better about carrying out the work that is entailed by the decision than they might doing work that is imposed on them by others. Also, the individual team member has a much better chance to “shine”, to get his or her contributions and ideas not only recognized but recognized as highly significant, because a team’s overall results can be more far-reaching and have greater impact than what might have otherwise been possible for the person to accomplish or contribute working alone.

Listening

Professor

Now I want to tell you about what one company found when it decided that it would turn over some of its new projects to teams of people, and make the team responsible for planning the projects and getting the work done. After about six months, the company took a look at how well the teams performed.

On virtually every team, some members got almost a “free ride” . . . they didn't contribute much at all, but if their team did a good job, they nevertheless benefited from the recognition the team got. And what about group members who worked especially well and who provided a lot of insight on problems and issues? Well . . . the recognition for a job well done went to the group as a whole, no names were named. So it won't surprise you to learn that when the real contributors were asked how they felt about the group process, their attitude was just the opposite of what the reading predicts.

Another finding was that some projects just didn't move very quickly. Why? Because it took so long to reach consensus; it took many, many meetings to build the agreement among group members about how they would move the project along. On the other hand, there were other instances where one or two people managed to become very influential over what their group did. Sometimes when those influencers said “That will never work” about an idea the group was developing, the idea was quickly dropped instead of being further discussed. And then there was another occasion when a couple influencers convinced the group that a plan of theirs was “highly creative.” And even though some members tried to warn the rest of the group that the project was moving in directions that might not work, they were basically ignored by other group members.

Can you guess the ending to this story? When the project failed, the blame was placed on all the members of the group.



TPO3

Reading

Rembrandt is the most famous of the seventeenth-century Dutch painters. However, there are doubts whether some paintings attributed to Rembrandt were actually painted by him. One such painting is known as attributed to Rembrandt because of its style, and indeed the representation of the woman's face is very much like that of portraits known to be by Rembrandt. But there are problems with the painting that suggest it could not be a work by Rembrandt.

First, there is something inconsistent about the way the woman in the portrait is dressed. She is wearing a white linen cap of a kind that only servants would wear-yet the coat she is wearing has a luxurious fur collar that no servant could afford. Rembrandt, who was known for his attention to the details of his subjects' clothing, would not have been guilty of such an inconsistency.

Second, Rembrandt was a master of painting light and shadow, but in this painting these elements do not fit together. The face appears to be illuminated by light reflected onto it from below. But below the face is the dark fur collar, which would absorb light rather than reflect it. So the face should appear partially in shadow-which is not how it appears. Rembrandt would never have made such an error.

Finally, examination of the back of the painting reveals that it was painted on a panel made of several pieces of wood glued together. Although Rembrandt often painted on wood panels, no painting known to be by Rembrandt uses a panel glued together in this way from several pieces of wood.

For these reasons the painting was removed from the official catalog of Rembrandt's paintings in the 1930s.

Listening

Professor:

Everything you just read about "Portrait of an Elderly Woman in a White Bonnet" is true, and yet after a thorough re-examination of the painting, a panel of experts has recently concluded that it's indeed a work by Rembrandt. Here is why. First, the fur collar. X-rays and analysis of the pigments in the paint have shown that the fur collar wasn't part of the original painting. The fur collar was painted over the top of the original painting about a hundred years after the painting was made. Why? Someone probably wanted to increase the value of the painting by making it look like a formal portrait of an aristocratic lady.

Second, the supposed error with light and shadow. Once the paint of the added fur color was removed, the original could be seen, in the original painting, the woman is wearing a simple collar of light-colored cloth. The light-colored cloth of this collar reflects light that illuminates part of the woman's face. That's why the face is not in partial shadow. So in the original painting, light and shadow are very realistic and just what we would expect from Rembrandt.

Finally, the wood panel. It turns out that when the fur collar was added, the wood panel was also enlarged with extra wood

pieces glued to the sides and the top to make the painting more grand and more valuable. So the original painting is actually painted on a single piece of wood, as would be expected from a Rembrandt painting. And in fact, researchers have found that the piece of wood in the original form of "Portrait of an Elderly Woman in a White Bonnet" is from the very same tree as the wood panel used for another painting by Rembrandt, his "Self-portrait with a Hat".



TPO4

Reading

Endotherms are animals such as modern birds and mammals that keep their body temperatures constant. For instance, humans are endotherms and maintain an internal temperature of 37°C, no matter whether the environment is warm or cold. Because dinosaurs were reptiles, and modern reptiles are not endotherms, it was long assumed that dinosaurs were not endotherms. However, dinosaurs differ in many ways from modern reptiles, and there is now considerable evidence that dinosaurs were, in fact, endotherms.

Polar dinosaurs

One reason for believing that dinosaurs were endotherms is that dinosaur fossils have been discovered in Polar Regions. Only animals that can maintain a temperature well above that of the surrounding environment could be active in such cold climates.

Leg position and movement

There is a connection between endothermy and the position and movement of the legs. The physiology of endothermy allows sustained physical activity, such as running. But running is efficient only if an animal's legs are positioned underneath its body, not at the body's side, as they are for crocodiles and many lizards. The legs of all modern endotherms are underneath the body, and so were the legs of dinosaurs. This strongly suggests that dinosaurs were endotherms.

Haversian canals

There is also a connection between endothermy and bone structure. The bones of endotherms usually include structures called Haversian canals. These canals house nerves and blood vessels that allow the living animal to grow quickly, and rapid body growth is in fact a characteristic of endothermy. The presence of Haversian canals in bone is a strong indicator that the animal is an endotherm, and fossilized bones of dinosaurs are usually dense with Haversian canals.

Listening

Professor:

Many scientists have problems with the arguments you read in the passage. They don't think those arguments prove that dinosaurs were endotherms.

Take the polar dinosaur argument. When dinosaurs lived, even the polar regions, where dinosaur fossils have been found, were much warmer than today, warm enough during part of the year for animals that were not endotherms to live. And during the months when the polar regions were cold, the so-called polar dinosaurs could have migrated to warmer areas or hibernated like many modern reptiles do. So the presence of dinosaur fossils in polar regions doesn't prove the dinosaurs were endotherms.

Well, what about the fact that dinosaurs have their legs placed under their bodies, not out to the side like crocodiles. That doesn't necessarily mean dinosaurs were high-energy endotherms built for running. There is another explanation for having legs under the body. This body structure supports more weight, so with the legs under their bodies, dinosaurs can grow to a very large size. Being large had advantages for dinosaurs, so we don't need the idea of endothermy and running to explain why dinosaurs evolved to have their legs under their bodies.

Ok, so how about bone structure? Many dinosaur bones do have Haversian canals, that's true. The dinosaur bones also have growth rings. Growth rings are thickening of the bone that indicates periods of time when the dinosaurs weren't rapidly growing. These growth rings are evidence that dinosaurs stopped growing or grew more slowly during cooler periods. This pattern of periodic growth, you know, rapid growth followed by no growth or slow growth, and then rapid growth again, is characteristic of animals that are not endotherms. Animals that maintain a constant body temperature year-round as true endotherms do grow rapidly even when the environment becomes cool.



TPO 5

Reading

As early as the twelfth century A.D., the settlements of Chaco Canyon in New Mexico in the American Southwest were notable for their "great houses," massive stone buildings that contain hundreds of rooms and often stand three or four stories high. Archaeologists have been trying to determine how the buildings were used. While there is still no universally agreed upon explanation, there are three competing theories.

One theory holds that the Chaco structures were purely residential, with each housing hundreds of people. Supporters of this theory have interpreted Chaco great houses as earlier versions of the architecture seen in more recent Southwest societies. In particular, the Chaco houses appear strikingly similar to the large, well-known "apartment buildings" at Taos, New Mexico, in which many people have been living for centuries.

A second theory contends that the Chaco structures were used to store food supplies. One of the main crops of the Chaco people was grain maize, which could be stored for long periods of time without spoiling and could serve as a long-lasting supply of food. The supplies of maize had to be stored somewhere, and the size of the great houses would make them very suitable for the purpose.

A third theory proposes that houses were used as ceremonial centers. Close to one house, called Pueblo Alto, archaeologists identified an enormous mound formed by a pile of old material. Excavations of the mound revealed deposits containing a surprisingly large number of broken pots. This finding has been interpreted as evidence that people gathered at Pueblo Alto for special ceremonies. At the ceremonies, they ate festive meals and then discarded the pots in which the meals had been prepared or served. Such ceremonies have been documented for other Native American cultures.

Listening

Professor:

Unfortunately none of the arguments about what the Chaco great houses were used for is convincing.

First, sure, from the outside, the great houses look like later and Native American apartment but the inside of the great houses casts serious doubt on the idea that many people lived there. I'll explain. If hundreds of people were living in the great houses, then there would have to be many fireplaces, where each family did its daily cooking, but there are very few fireplaces. In one of the largest great houses, there were fireplaces for only around ten families. Yet there were enough rooms in the great house for more than a hundred families, so the primary function of the houses couldn't have been residential.

Second, the idea that the great houses were used to store grain maize ; unsupported by evidence. It may sound plausible that large empty rooms were used for storage, but excavations of the great houses have not uncovered many traces of maize or maize containers. If the great houses were used for storage, why isn't there more spilled maize on the floor? Why aren't there more remains of big containers?

Third, the idea that the great houses were ceremonial centers isn't well supported either. You know that mound at Pueblo Alto? It contains lots of other materials besides broken pots, stuff you wouldn't expect from ceremonies. For example, there are large quantities of building materials, sands, stones, even construction tools. This suggests that the mound is just a trash heap of construction material, stuff that was thrown away or not used up when a house was being built. The pots in the pile could be regular trash too, leftover from the meals of the construction workers. So the Pueblo Alto mound is not good evidence that the great houses were used for special ceremonies



TPO6

Reading

Communal online encyclopedias represent one of the latest resources to be found on the Internet. They are in many respects like traditional printed encyclopedias collections of articles on various subjects. What is specific to these online encyclopedias, however, is that any Internet user can contribute a new article or make an editorial change in an existing one. As a result, the encyclopedia is authored by the whole community of Internet users. The idea might sound attractive, but the communal online encyclopedias have several important problems that make them much less valuable than traditional, printed encyclopedias.

First, contributors to a communal online encyclopedia often lack academic credentials, thereby making their contributions partially informed at best and downright inaccurate in many cases. Traditional encyclopedias are written by trained experts who adhere to standards of academic rigor that nonspecialists cannot really achieve.

Second, even if the original entry in the online encyclopedia is correct, the communal nature of these online encyclopedias gives unscrupulous users and vandals or hackers the opportunity to fabricate, delete, and corrupt information in the encyclopedia. Once changes have been made to the original text, an unsuspecting user cannot tell the entry has been tampered with. None of this is possible with a traditional encyclopedia.

Third, the communal encyclopedias focus too frequently, and in too great a depth, on trivial and popular topics, which creates a false impression of what is important and what is not. A child doing research for a school project may discover that a major historical event receives as much attention in an online encyclopedia as, say, a single long-running television program. The traditional encyclopedia provides a considered view of what topics to include or exclude and contains a sense of proportion that online "democratic" communal encyclopedias do not.

Listening

Professor:

The communal online encyclopedia will probably never be perfect, but that's a small price to pay for what it does offer. The criticisms in the reading are largely the result of prejudice against and ignorance about how far online encyclopedias have come.

First, errors. It's hardly a fair criticism that encyclopedias online have errors. Traditional encyclopedias have never been close to perfectly accurate, if you are looking for a really comprehensive reference work without any mistakes, you are not going to find it, on or off line. The real point is that it's easy for errors in factual material to be corrected in an online encyclopedia. But with the printed and bound encyclopedia, the errors remain for decades.

Second, hacking. Online encyclopedias have recognized the importance of protecting their articles from malicious hackers. One strategy they started using is to put the crucial facts in the articles that nobody disputes in a read-only format, which is a format that no one can make changes to. That way you are making sure that the crucial facts in the articles are reliable. Another strategy that's being used is to have special editors whose job is to monitor all changes made to the articles and eliminate those changes that are clearly malicious.

Third, what's worth knowing about? The problem for traditional encyclopedias is that they have limited space, so they have to decide what's important and what's not. And in practice, the judgments of the group of academics that make these decisions don't reflect the great range of interests that people really have. But space is definitely not an issue for online encyclopedias. The academic articles are still represented in online encyclopedias, but there can be a great variety of articles and topics that accurately reflect the great diversity of users' interests. The diversity of use in topics that online encyclopedias offer is one of their strongest advantages



TPO7

Reading

In an effort to encourage ecologically sustainable forestry practices, an international organization started issuing certifications to wood companies that meet high ecological standards by conserving resources and recycling materials. Companies that receive this certification can attract customers by advertising their products as ecocertified. Around the world, many wood companies have adopted new, ecologically friendly practices in order to receive ecocertification. However, it is unlikely that wood companies in the United States will do the same, for several reasons.

First, American consumers are exposed to so much advertising that they would not value or even pay attention to the ecocertification label. Because so many mediocre products are labeled "new" or "improved," American consumers do not place much trust in advertising claims in general.

Second, ecocertified wood will be more expensive than uncertified wood because in order to earn ecocertification, a wood company must pay to have its business examined by a certification agency. This additional cost gets passed on to consumers—American consumers tend to be strongly motivated by price, and therefore they are likely to choose cheaper uncertified wood products. Accordingly, American wood companies will prefer to keep their prices low rather than obtain ecocertification.

Third, although some people claim that it always makes good business sense for American companies to keep up with the developments in the rest of the world, this argument is not convincing. Pursuing certification would make sense for American wood companies only if they marketed most of their products abroad. But that is not the case; American wood businesses sell most of their products in the United States, catering to a very large customer base that is satisfied with the merchandise.

Listening

Well, despite what many people say, there is a good reason to think that many American wood companies will eventually seek ecocertification for the wood products.

First off, companies in the United States don't treat all advertising the same. They distinguish between advertising claims that companies make about their own products and claims made by independent certification agencies. Americans have a lot of confidence in independent agencies. Thus ecologically-minded Americans are likely to react very favorably to wood products ecologically certified by independent organization with an international reputation for trustworthiness.

Second point, of course it is true that American consumers care a lot about price, who doesn't? But studies of how consumers make decisions show that price alone determines consumers' decisions only when the price of one competing product is much higher or lower than the other. When the difference between two products is small, say, less than 5 percent, as is the case with certified wood, Americans often do choose on factors other than price. And Americans are becoming increasingly convinced of the value of preserving and protecting the environment.

And third, US Wood companies should definitely pay attention what is going on in the wood business internationally. Not because of foreign consumers but because of foreign competitors. As I just told you, there is a good chance that many American consumers will be interested in ecocertified products, and guess why? If American companies are slow capturing those consumers, you can be sure that foreign companies will soon start crowding into the American markets, offering ecocerfied wood that domestic companies don't.



TPO8

Reading

Toward the end of his life, the Chevalier de Seingalt (1725-1798) wrote a long memoir recounting his life and adventures. The Chevalier was a somewhat controversial figure, but since he met many famous people, including kings and writers, his memoir has become a valuable historical source about European society in the eighteenth century. However, some critics have raised doubts about the accuracy of the memoir. They claim that the Chevalier distorted or invented many events in the memoir to make his life seem more exciting and glamorous than it really was.

For example, in his memoir the Chevalier claims that while living in Switzerland, he was very wealthy, and it is known that he spent a great deal of money there on parties and gambling. However, evidence has recently surfaced that the Chevalier borrowed considerable sums of money from a Swiss merchant. Critics thus argue that if the Chevalier had really been very rich, he would not have needed to borrow money.

Critics are also skeptical about the accuracy of the conversations that the Chevalier records in the memoir between himself and the famous writer Voltaire. No one doubts that the Chevalier and Voltaire met and conversed. However, critics complain that the memoir cannot possibly capture these conversations accurately, because it was written many years after the conversations occurred. Critics point out that it is impossible to remember exact phrases from extended conversations held many years earlier.

Critics have also questioned the memoir's account of the Chevalier's escape from a notorious prison in Venice, Italy. He claims to have escaped the Venetian prison by using a piece of metal to make a hole in the ceiling and climbing through the roof. Critics claim that while such a daring escape makes for enjoyable reading, it is more likely that the Chevalier's jailers were bribed to free him. They point out that the Chevalier had a number of politically well-connected friends in Venice who could have offered a bribe.

Listening

Professor:

No memoir can possibly be correct in every detail, but still, the Chevalier's memoir is pretty accurate overall, and is, by and large, a reliable historical source. Let's look at the accuracy of the three episodes mentioned in the reading.

First, the loan from the merchant. Well, that doesn't mean that the Chevalier was poor. Let me explain. We know that in Switzerland, the Chevalier spent huge amounts of money on parties and gambling, and he had wealth. But it was a kind of property you have to sell first to get money. So it usually took a few days to convert his assets into actual money. So when he ran out of cash, he had to borrow some while he was waiting for his money to arrive, but that's not being poor.

Second, the conversations with Voltaire. The Chevalier states in his memoir that each night immediately after conversing with Voltaire, he wrote down everything he could remember about that particular night's conversation. Evidently the Chevalier kept his notes of these conversations for many years and referred to them when writing the memoir. Witnesses who lived with the Chevalier in his later life confirmed that he regularly consulted notes and journals when composing the memoir.

Third, the Chevalier's escape from a prison in Venice. Other prisoners in that prison had even more powerful friends than he did, and none of them were ever able to bribe their way to freedom, So bribery hardly seems likely in his case. The best evidence, though, comes from some old Venetian government documents. They indicate that soon after the Chevalier escaped from the prison, the ceiling of his old prison room had to be repaired. Why would they need to repair a ceiling unless he had escaped exactly as he said he did.



TPO9

Reading

Car manufacturers and governments have been eagerly seeking a replacement for the automobile's main source of power, the internal-combustion engine. By far the most promising alternative source of energy for cars is the hydrogen-based fuel-cell engine, which uses hydrogen to create electricity that, in turn, powers the car. Fuel-cell engines have several advantages over internal-combustion engines and will probably soon replace them.

One of the main problems with the internal-combustion engine is that it relies on petroleum, either in the form of gasoline or diesel fuel. Petroleum is a finite resource; someday, we will run out of oil. The hydrogen needed for fuel-cell engines cannot easily be depleted. Hydrogen can be derived from various plentiful sources, including natural gas and even water. The fact that fuel-cell engines utilize easily available, renewable resources makes them particularly attractive.

Second, hydrogen-based fuel cells are attractive because they will solve many of the world's pollution problems. An unavoidable by-product of burning oil is carbon dioxide, and carbon dioxide harms the environment. On the other hand, the only byproduct of fuel-cell engines is water.

Third, fuel-cell engines will soon be economically competitive because people will spend less money to operate a fuel-cell engine than they will to operate an internal-combustion engine. This is true for one simple reason: a fuel-cell automobile is nearly twice as efficient in using its fuel as an automobile powered by an internal-combustion engine is. In other words, the fuel-cell powered car requires only half the fuel energy that the internal-combustion powered car does to go the same distance.

Listening

Professor:

The reading is correct in pointing out the problems associated with oil-powered cars. Yes, oil is a finite resource, and yes, burning oil harms the environment. However, the reading is way too optimistic in its assessment of hydrogen-based fuel-cell engines. Hydrogen is not the solution to these problems.

First, hydrogen is not as easily available as the passage indicates. Although it's present in common substances like water, it's not directly useable in that form. For using a fuel-cell engine, hydrogen must first be obtained in a pure liquid state. This pure liquid hydrogen is a highly artificial substance. It's technologically very difficult to produce and store liquid hydrogen. For example, it must be kept very very cold at minus 253 degrees Celsius. Imagine the elaborate cooling technology that's required for that! So hydrogen is not such a practical and easily available substance, is it?

Second, using hydrogen would not solve the pollution problems associated with cars. Why? Producing pure hydrogen creates a lot of pollution. To get pure hydrogen from water or natural gas, you have to use a purification process that requires lots of energy that's obtained by burning coal or oil. And burning coal and oil creates lots of pollution. So although

the cars would not pollute, the factories that generated the hydrogen for the cars would pollute.

Third, there won't necessarily be any cost savings when you consider how expensive it is to manufacture the fuel-cell engine. That's because fuel-cell engines require components made of platinum, a very rare and expensive metal. Without the platinum components in the engine, the hydrogen doesn't undergo the chemical reaction that produces the electricity to power the automobile. All the efforts to replace platinum with a cheaper material have so far been unsuccessful.



TPO10

Reading

The sea otter is a small mammal that lives in waters along the western coast of North America from California to Alaska. When some sea otter populations off the Alaskan coast started rapidly declining a few years ago, it caused much concern because sea otters play an important ecological role in the coastal ecosystem. Experts started investigating the cause of the decline and quickly realized that there were two possible explanations: environmental pollution or attacks by predators. Initially, the pollution hypothesis seemed the more likely of the two.

The first reason why pollution seemed the more likely cause was that there were known sources of it along the Alaskan coast, such as oil rigs and other sources of industrial chemical pollution. Water samples from the area revealed increased levels of chemicals that could decrease the otters' resistance to life-threatening infections and thus could indirectly cause their deaths.

Second, other sea mammals such as seals and sea lions along the Alaskan coast were also declining, indicating that whatever had endangered the otters was affecting other sea mammals as well. This fact again pointed to environmental pollution, since it usually affects the entire ecosystem rather than a single species. Only widely occurring predators, such as the orca (a large predatory whale), could have the same effect, but orcas prefer to hunt much larger prey, such as other whales.

Third, scientists believed that the pollution hypothesis could also explain the uneven pattern of otter decline: at some Alaskan locations the otter populations declined greatly, while at others they remained stable. Some experts explained these observations by suggesting that ocean currents or other environmental factors may have created uneven concentrations of pollutants along the coast.

Listening

Professor:

Well, ongoing investigations have revealed that predation is the most likely cause of sea otter decline after all. Well, ongoing investigations have revealed that predation is the most likely cause of sea otter decline after all.

First, the pollution theory is weakened by the fact that no one can really find any dead sea otters washing off on Alaskan beaches. That's not what you would expect if infections caused by pollution started killing a lot of otters. On the other hand, the fact that it's so hard to find dead otters is consistent with the predator hypothesis. If an otter is killed by a predator, it's eaten immediately so it can't wash up on shore.

Second, although orcas may prefer to hunt whales, whales have essentially disappeared from the area because of human hunters. That means that orcas have had to change their diet to survive and since only smaller sea mammals are now available, orcas have probably started hunting those. So it probably is the orcas that are causing the decline of all the smaller

sea mammals mentioned in the passage - the seals, the sea lions and the sea otters.

And third, the uneven pattern of otter decline is better explained by the orca predation theory than by the pollution theory. What happens to otters seems to depend on whether the location where they live is accessible to orcas or not. In those locations that orcas can access easily, the number of sea otters has declined greatly. However, because orcas are so large, they can't access shallow or rocky locations. And shallow and rocky locations are precisely the types of locations where sea otter populations have not declined.



TPO11

Reading

A recent study reveals that people especially young people are reading far less literature, novels, plays, and poems, than they used to. This is troubling because the trend has unfortunate effects for the reading public, for culture in general, and for the future of literature itself.

While there has been a decline in book reading generally, the decline has been especially sharp for literature. This is unfortunate because nothing else provides the intellectual stimulation that literature does. Literature encourages us to exercise our imaginations, empathize with others, and expand our understanding of language. So by reading less literature, the reading public is missing out on important benefits.

Unfortunately, missing out on the benefits of literature is not the only problem. What are people reading instead? Consider the prevalence of self-help books on lists of best sellers. These are usually superficial poorly written, and intellectually undemanding. Additionally, instead of sitting down with a challenging novel, many persons are now more likely to turn on the television, watch a music video, or read a Web page. Clearly, diverting time previously spent in reading literature to trivial forms of entertainment has lowered the level of culture in general.

The trend of reading less literature is all the more regrettable because it is taking place during a period when good literature is being written. There are many talented writers today, but they lack an audience. This fact is bound to lead publishers to invest less in literature and so support fewer serious writers. Thus, the writing as well as the reading of literature is likely to decline because of the poor standards of today's readers.

Listening

Professor:

It is often said that people are reading less literature today than they used to. What should of this?

Well first, a book doesn't have to be literature to be intellectually stimulating. Science writing history, political analysis and so forth aren't literature perhaps, but they are often of high quality and these kinds of books can be just as creative and well-written as a novel or a play They can stimulate the imagination. So don't assume that someone who isn't reading literature isn't reading a good book.

But let's say that people aren't just spending less time with literature, they are also spending less time with books in general. Does that mean that the cultures is in decline? No, there's plenty of culturally valuable material that isn't written - music and movies, for example. Are people wasting their time when they listen to a brilliant song or watch a good movie? Do these non-literary activities lower cultural standards? Of course not. Culture has changed. In today's culture, there are many forms of expression available other than novels and poems. And some of these creative forms speak more directly to contemporary concerns than literature does.

Finally, it's probably true that there's less support for literature today than in earlier generations.

But don't be too quick to blame the readers. Sometimes it's the author's faults. Let's be honest. A lot of modern literature is intended to be difficult to understand. Here is not much reason to suppose that earlier generations of readers would have read a lot of today's literature either.



TPO12

Reading

Jane Austen (1775-1817) is one of the most famous of all English novelists, and today her novels are more popular than ever, with several recently adapted as Hollywood movies. But we do not have many records of what she looked like. For a long time, the only accepted image of Austen was an amateur sketch of an adult Austen made by her sister Cassandra. However recently a professionally painted, full-length portrait of a teenage girl owned by a member of the Austen family has come up for sale. Although the professional painting is not titled Jane Austen, there are good reasons to believe she is the subject.

First, in 1882, several decades after Austen's death, Austen's family gave permission to use the portrait as an illustration in an edition of her letters. Austen's family clearly recognized it as a portrait of the author. So, for over a century now, the Austen family itself has endorsed the claim that the girl in the portrait is Jane Austen.

Second, the face in the portrait clearly resembles the one in Cassandra's sketch, which we know depicts Austen. Though somewhat amateurish, the sketch communicates definite details about Austen's face. Even though the Cassandra sketch is of an adult Jane Austen, the features are still similar to those of the teenage girl in the painting. The eyebrows, nose, mouth, and overall shape of the face are very much like those in the full-length portrait.

Third, although the painting is unsigned and undated, there is evidence that it was painted when Austen was a teenager. The style links it to Ozias Humphrey, a society portrait painter who was the kind of professional the wealthy Austen family would hire. Humphrey was active in the late 1780s and early 1790s, exactly the period when Jane Austen was the age of the girl in the painting.

Listening

Professor:

The evidence linking this portrait to Jane Austen is not at all convincing. Sure, the painting has long been somewhat loosely connected to Austen's extended family and their descendents, but this hardly proves it's a portrait of Jane Austen as a teenager. The reading's arguments that the portrait is of Austen are questionable at best.

First, when the portrait was authorized for use in the 1882 publication of her letters, Jane Austen had been dead for almost 70 years. So the family members who asserted that the painting was Jane had never actually seen her themselves. They couldn't have known for certain if the portrait was of Austen or not.

Second, the portrait could very well be that of a relative of Austen's, a fact that would explain the resemblance between its subject and that of Cassandra's sketch. The extended Austen family was very large and many of Jane Austen's female cousins were teenagers in the relevant period or had children who were teenagers. And some of these teenage girls could have resembled Jane Austen. In fact, many experts believe that the true subject of the portrait was one of those relatives, Marianne Kempian, who was a distant niece of Austen's.

Third, the painting has been attributed to Humphrey only because of the style. But other evidence points to a later date. A stamp on the back of the picture indicates that the blank canvas, you know the actual piece of cloth on which the picture was painted, was sold by a man named William Legg. Record showed that William Legg did not sell canvases in London when Jane Austen was a teenager. He only started selling canvases when she was 27 years old. So it looks like the canvas was used for the painting at a time when Austen was clearly older than the girl in the portrait.



TPO13

Reading

Private collectors have been selling and buying fossils, the petrified remains of ancient organisms, ever since the eighteenth century. In recent years, however, the sale of fossils, particularly of dinosaurs and other large vertebrates, has grown into a big business. Rare and important fossils are now being sold to private ownership for millions of dollars. This is an unfortunate development for both scientists and the general public.

The public suffers because fossils that would otherwise be donated to museums where everyone can see them are sold to private collectors who do not allow the public to view their collections. Making it harder for the public to see fossils can lead to a decline in public interest in fossils, which would be a pity.

More importantly, scientists are likely to lose access to some of the most important fossils and thereby miss out on potentially crucial discoveries about extinct life forms. Wealthy fossil buyers with a desire to own the rarest and most important fossils can spend virtually limitless amounts of money to acquire them. Scientists and the museums and universities they work for often cannot compete successfully for fossils against millionaire fossil buyers.

Moreover, commercial fossil collectors often destroy valuable scientific evidence associated with the fossils they unearth. Most commercial fossil collectors are untrained or uninterested in carrying out the careful field work and documentation that reveal the most about animal life in the past. For example, scientists have learned about the biology of nest-building dinosaurs called oviraptors by carefully observing the exact position of oviraptor fossils in the ground and the presence of other fossils in the immediate surroundings. Commercial fossil collectors typically pay no attention to how fossils lie in the ground or to the smaller fossils that may surround bigger ones.

Listening

Professor:

Of course there are some negative consequences of selling fossils in the commercial market, but they have been greatly exaggerated. The benefits of commercial fossil trade greatly outweigh the disadvantages.

First of all, the public is likely to have greater exposure to fossils as a result of commercial fossil trade, not less exposure. Commercial fossil hunting makes a lot of fossils available for purchase, and as a result, even low-level public institutions like public schools and libraries can now routinely buy interesting fossils and display them for the public.

As for the idea that scientists will lose access to really important fossils, that's not realistic either.

Before anyone can put a value on a fossil, it needs to be scientifically identified, right? Well, the only people who can identify fossils, who can really tell what a given fossil is or isn't, are scientists, by performing detailed examinations and tests on the fossils themselves. So even if a fossil is destined to go to a private collector, it has to pass through the hands of scientific experts first. This way, the scientific community is not going to miss out on anything important that's out there.

Finally, whatever damage commercial fossil collectors sometimes do, if it weren't for them, many fossils would simply go undiscovered because there aren't that many fossil collecting operations that are run by universities and other scientific institutions. Isn't it better for science to at least have more fossils being found even if we don't have all the scientific data we'd like to have about their location and surroundings than it is to have many fossils go completely undiscovered?



TPO14

Reading

Every year, forest fires and severe storms cause a great deal of damage to forests in the northwestern United States. One way of dealing with the aftermath of these disasters is called salvage logging, which is the practice of removing dead trees from affected areas and using the wood for lumber, plywood, and other wood products. There are several reasons why salvage logging is beneficial both to a damaged forest and to the economy.

First, after a devastating fire, forests are choked with dead trees. If the trees are not removed, they will take years to decompose; in the meantime, no new trees can grow in the cramped spaces. Salvage logging, however, removes the remains of dead trees and makes room for fresh growth immediately, which is likely to help forest areas recover from the disaster. Also, dead trees do more than just take up space. Decaying wood is a highly suitable habitat for insects such as the spruce bark beetle, which in large numbers can damage live, healthy spruce trees. So by removing rotting wood, salvage logging helps minimize the dangers of insect infestation, thus contributing to the health of the forest.

Third and last, salvage logging has economic benefits. Many industries depend upon the forests for their production, and because of this a fire can have a very harmful effect on the economy. Often, however, the trees that have been damaged by natural disasters still can provide much wood that is usable by industries. Furthermore, salvage logging requires more workers than traditional logging operations do, and so it helps create additional jobs for local residents.

Listening

Professor:

Salvage logging may appear to be an effective way of helping forests recover after a destructive fire or storm, but it can actually result in serious longer-term environmental damage. Its economic benefits are also questionable.

First, cleaning up a forest after a fire or storm does not necessarily create the right conditions for tree growth. In fact, the natural process of wood decomposition enriches the soil and makes it more suitable for future generations of tree. The rapid removal of dead trees can result in soil that lacks the nutrients necessary for growth.

Second, it's true that rotting wood can increase insect populations, but is this really bad for the forest? In fact, spruce bark beetles have lived in Alaskan forest for nearly a hundred years without causing major damage. And of course dead trees do not provide habitats only for harmful insects. They are also used by birds and other insects that are important contributors to the long-term health of forests. In the long run, therefore, salvage logging may end up doing more harm to forests than harmful insects do.

And third, the economic benefits of salvage logging are small and don't last very long, in severely damaged forests, much of the lumber can be recovered only by using helicopters and other vehicles that are expensive to use and maintain. Furthermore, jobs created by salvage logging are only temporary and are often filled by outsiders with more experience or

training than local residents have.



TPO15

Reading

The cane toad is a large (1.8 kg) amphibian species native to Central and South America. It was deliberately introduced to Australia in 1935 with the expectation that it would protect farmers' crops by eating harmful insects. Unfortunately, the toad multiplied rapidly, and a large cane toad population now threatens small native animals that are not pests. Several measures have been proposed to stop the spread of the cane toad in Australia.

One way to prevent the spread of the toad would be to build a national fence. A fence that blocks the advance of the toads will prevent them from moving into those parts of Australia that they have not yet colonized. This approach has been used before: a national fence was erected in the early part of the twentieth century to prevent the spread of rabbits, another animal species that was introduced in Australia from abroad and had a harmful impact on its native ecosystems.

Second, the toads could be captured and destroyed by volunteers. Cane toads can easily be caught in simple traps and can even be captured by hand. Young toads and cane toad eggs are even easier to gather and destroy, since they are restricted to the water. If the Australian government were to organize a campaign among Australian citizens to join forces to destroy the toads, the collective effort might stop the toad from spreading.

Third, researchers are developing a disease-causing virus to control the cane toad populations. This virus will be specially designed: although it will be able to infect a number of reptile and amphibian species, it will not harm most of the infected species; it will specifically harm only the cane toads. The virus will control the population of cane toads by preventing them from maturing and reproducing.

Listening

The cane toad won't be as easy to get rid of as the reading suggests. The measures proposed by the reading are likely either to be unsuccessful or to cause unwanted environmental damage.

First of all, a national fence probably won't stop the spread of the toad. That's because young toads and toad eggs are found in rivers and streams. No matter where the fence is located, at some point there will be rivers or streams flowing from one side to the other. These waterways will be able to carry the young toads and their eggs to the other side. Since it's only necessary for a few young toads or eggs to get through the fence in order to establish population on the other side, the fence is unlikely to be effective.

Secondly, a massive group of volunteers could have success trapping and destroying toads. But it's likely that these untrained volunteers would inadvertently destroy many of Australia's native frogs. Some of which are endangered. It's not always easy to tell the cane toad apart from native frogs especially when it's young.

Third, using the virus is a bad idea because it could have terrible consequences for cane toads in their original habitat in

Central and South America. You might be wondering how can a virus released in Australia cause harm in the America. Well, Australian reptiles and amphibians are often transported to other continents by researchers or pet collectors for example. Once the animals infected by the virus reach Central and South America, the virus will attack the native cane toads and devastate their populations. That would be an ecological disaster because in the America cane toads are a native species and a vital part of the ecosystem. So if they are eliminated, the whole ecosystem will suffer.



TPO16

Reading

The United Kingdom (sometimes referred to as Britain) has a long and rich history of human settlement. Traces of buildings, tools, and art can be found from periods going back many thousands of years: from the Stone Age, through the Bronze Age, the Iron Age, the time of the Roman colonization, the Middle Ages, up to the beginnings of the industrial age. Yet for most of the twentieth century, the science of archaeology, dedicated to uncovering and studying old cultural artifacts, was faced with serious problems and limitations in Britain.

First, many valuable artifacts were lost to construction projects. The growth of Britain's population, especially from the 1950s on, spurred a lot of new construction in British cities, towns, and villages. While digging foundations for new buildings, the builders often uncovered archaeologically valuable sites. Usually, however, they proceeded with the construction and did not preserve the artifacts. Many archaeologically precious artifacts were therefore destroyed. Second, many archaeologists felt that the financial support for archaeological research was inadequate. For most of the twentieth century, archaeology was funded mostly through government funds and grants, which allowed archaeologists to investigate a handful of the most important sites but which left hundreds of other interesting projects without support. Furthermore, changing government priorities brought about periodic reductions in funding.

Third, it was difficult to have a career in archaeology. Archaeology jobs were to be found at universities or with a few government agencies, but there were never many positions available. Many people who wanted to become archaeologists ended up pursuing other careers and contributing to archaeological research only as unpaid amateurs.

Listening

In 1990, new rules and guidelines were adopted in United Kingdom and that had changed the whole feel of Archaeology in that country. The new guidelines improved the situation in all 3 areas discussed in the passage. First, the new guidelines state that before any construction project can start, the construction site has to be examined by archaeologists to see whether the site is of archaeological interest or value. If the site is of archaeological interest, the next step is for the builders, archaeologists and local government officials to get together and make a plan for preserving the archaeological artifacts, either by building around them or by excavating a document in them properly before the construction is allowed to proceed.

Second, an important part of new guidelines is the rule that any archaeological work done on the construction site will be paid for by the construction company not by the government. The construction company has to pay for the initial examination of the site, and then for all the work carried out under the preservation plan. This is whole new source of financial support. The funding from the construction company has allowed researchers to study a far great range of archaeological sites than they could in past. Last, the new guidelines provide a lot of paid work for archaeologists, work that didn't exist before. Expert archaeologists are now hired all stage of the process to examine the site for archaeological value, then have to drop the preservation plan to do the researcher and professional scientific manner and finally to process the data and write reports and articles. The increased job career opportunities in Archaeology have increased the number

professional archaeologists in Britain which is now the highest it's ever been.



TPO17

Reading

In the past century, the steady growth of the human population and the corresponding increase in agriculture and pesticide use have caused much harm to wildlife in the United States, birds in particular. Unfortunately for birds, these trends are likely to continue, with the result that the number of birds in the United States will necessarily decline.

First, as human populations and settlements continue to expand, birds' natural habitats will continue to disappear. Forests, wetlands, and grasslands will give way to ever more homes, malls, and offices. As the traditional areas suitable for birds keep decreasing, so will the size of the bird populations that depend on those vanishing habitats.

Second, agricultural activities must increase to keep pace with the growing human population. The growth of agriculture will also result in the further destruction of bird habitats as more and more wilderness areas are converted to agricultural use. As a result, bird populations in rural areas will continue to decline.

Third, as human settlements expand and agriculture increases, the use of chemical pesticides will also increase. Pesticides are poisons designed to kill agricultural and home garden pests, such as insects, but inevitably, pesticides get into the water and into the food chain for birds where they can harm birds. Birds that eat the poisoned insects or drink contaminated water can die as a result, and even if pesticides do not kill birds outright, they can prevent them from reproducing successfully. So pesticides have significantly contributed to declines in bird population, and because there will continue to be a need to control agricultural pests in the future, this decline will continue.

Listening

The passage claims that there will be fewer and fewer birds, but the arguments used to support this claim are unconvincing.

First, it's true that urban growth has been bad for some types of birds, but urban development actually provides better and larger habitats for other types, so much so that city and suburban dwellers often complain about increased birds populations, seagulls at landfills, pigeons on the streets and so on. Even birds like hawks and falcons can now be found in cities, where they prey on the increasing populations of pigeons and rodents. So it's not going to be a story of uniform decline of bird populations in the future. Some populations may shrink, but others will grow.

As for agriculture, it's true that it too will increase in the future, but not in the way assumed by the reading passage. The truth is, in the United States, less and less land is being used for agriculture every year. Increasing in agricultural production have resulted from and will continue to result from the introduction of new, more productive varieties of crops. These new crops produce more food per unit of land, and as a result, there's no need to destroy wilderness areas.

And third, while it's certainly true that traditional pesticides have been destructive to birds, it's incorrect to project this history into the future. Now that people are aware of the possible consequences of traditional pesticides, two changes have

occurred. First, new and much less toxic pesticides have been developed, and that's important. Second, and perhaps more importantly there is a growing trend to develop more pest resistant crops, crops that are genetically designed to be unattractive to pests. Pest resistant crops greatly reduce the need for chemical pesticides. And best of all, pest resistant crops don't harm birds at all.



TPO18

Reading

In the 1950s *Torreya taxifolia*, a type of evergreen tree once very common in the state of Florida, started to die out. No one is sure exactly what caused the decline, but chances are good that if nothing is done, *Torreya* will soon become extinct. Experts are considering three ways to address the decline of *Torreya*.

The first option is to reestablish *Torreya* in the same location in which it thrived for thousands of years. *Torreya* used to be found in abundance in the northern part of Florida, which has a specific microclimate. A microclimate exists when weather conditions inside a relatively small area differ from the region of which that area is a part. Northern Florida's microclimate is very favorable to *Torreya*'s growth. This microclimate is wetter and cooler than the surrounding region's relatively dry, warm climate. Scientists have been working to plant *Torreya* seeds in the coolest, dampest areas of the microclimate.

The second option is to move *Torreya* to an entirely different location, far from its Florida microclimate. *Torreya* seeds and saplings have been successfully planted and grown in forests further north, where the temperature is significantly cooler. Some scientists believe that *Torreya* probably thrived in areas much further north in the distant past, so by relocating it now, in a process known as assisted migration, humans would simply be helping *Torreya* return to an environment that is more suited to its survival.

The third option is to preserve *Torreya* in research centers. Seeds and saplings can be moved from the wild and preserved in a closely monitored environment where it will be easier for scientists both to protect the species and conduct research on *Torreya*. This research can then be used to ensure the continued survival of the species.

Listening

You've just read about three ways to save *Torreya taxifolia*. Unfortunately, none of these three options provides a satisfactory solution. About the first solution-reestablishing *Torreya* in the same location-that's unlikely to be successful, because of what's happening to the coolest dampest areas within *Torreya*'s micro-climate. These areas are being strongly affected by changes in the climate of the larger region. This could be because global warming has contributed to an increase in overall temperatures in the region or because wetlands throughout Florida have been drained. Either way, many areas across the region are becoming drier, so it's unlikely that *Torreya* would have the conditions it needs to survive anywhere within its original Florida micro-climate.

Now about the second solution, relocating *Torreya* far from where it currently grows, well, let's look at what happened when humans helped another tree, the black locust tree, move north to a new environment. When they did this, the black locust tree spread so quickly that it killed off many plants and trees in the new environment, and some of these plants and trees were themselves already in danger of becoming extinct. So assisted migration can have unpredicted outcomes for the new environment.

Third, research centers are probably not a solution either. That's because the population of Torreya trees that can be kept in the centers will probably not be able to resist diseases. For a population of trees to survive a disease, it needs to be relatively large and it needs to be genetically diverse. Tree populations in the wild usually satisfy those criteria but research centers would simply not have enough capacity to keep a large and diverse population of Torreya trees, so trees in such centers will not be capable of surviving diseases in the long term.



TPO19

Reading

Many consumers ignore commercial advertisements. In response, advertising companies have started using a new tactic, called "buzzing." The advertisers hire people, buzzers, who personally promote (buzz) products to people they know or meet. The key part is that the buzzers do not reveal that they are being paid to promote anything. They behave as though they were just spontaneously praising a product during normal conversation. Buzzing has generated a lot of controversy, and many critics would like to see it banned.

First, the critics complain that consumers should know whether a person praising a product is being paid to praise the product. Knowing this makes a big difference: we expect the truth from people who we believe do not have any motive for misleading us. But with buzzing what you hear is just paid advertising, which may well give a person incorrect information about the buzzed product.

Second, since buzzers pretend they are just private individuals, consumers listen to their endorsements less critically than they should. With advertisements in print or on TV, the consumer is on guard for questionable claims or empty descriptions such as "new and improved." But when consumers do not know they are being lobbied, they may accept claims they would otherwise be suspicious of. This may suit the manufacturers, but it could really harm consumers.

And worst of all is the harmful effect that buzzing is likely to have on social relationships. Once we become aware that people we meet socially may be buzzers with a hidden agenda, we will become less trustful of people in general. So buzzing will result in the spread of mistrust and the expectation of dishonesty.

Listening

Hi, my name is Bill. Um, I was talking your professor in the subway about the great phone service that I was using. And it turned out we're both interested in marketing. So he asked me to talk in his marketing classes. You see, I am a buzzer, part time, you know. During the day, I'm a student just like you. Now, I read that piece attacking buzzing, it is really misleading. How would it describe buzzing leading a lot, and gives a wrong impression?

First, it makes it sound like buzzers don't tell the truth about the products they're buzzing. That's not true. How buzzing works this. Companies find people who use their products and who really think product is good. So buzzing is not like ordinary advertisement where an actress is paid to read some lies. Um, yes, I get paid for telling you what I am thinking, but you get the truth from buzzers. I really do think my phone service is great. That is why the company hired me.

Second, the reading makes it seem that when a buzzer talks to someone, the person believes whatever they hear from the buzzer. Not true. In fact, the opposite is true. People I talk to ask a lot of questions about the products I buzz, that is about the price, service and how long I used the product. If I don't have good answers, they won't buy the products.

Finally, if you believe what you read, buzzing will destroy civilization, that is stupid. If a product is bad, the company can't recruit buzzers. So what you get from a buzzer is not only sincere but is likely to be about a good product. If you try the phone service I use, you're gonna love it. So people who try buzzed products are going to have a good experience. So end up being more trustful and open up to people.



TPO20

Reading

In the United States, it had been common practice since the late 1960s not to suppress natural forest fires. The “let it burn” policy assumed that forest fire would burn themselves out quickly, without causing much damage. However, in the summer of 1988, forest fires in Yellowstone, the most famous national park in the country, burned for more than two months and spread over a huge area, encompassing more than 800,000 acres. Because of the large scale of the damage, many people called for replacing the “let it burn” policy with a policy of extinguishing forest fires as soon as they appeared. Three kinds of damage caused by the “let it burn” policy were emphasized by critics of the policy.

First, Yellowstone fires caused tremendous damage to the park’s trees and other vegetation. When the fires finally died out, nearly one third of Yellowstone’s land had been scorched. Trees were charred and blackened from flames and smoke. Smaller plants were entirely incinerated. What had been a national treasure now seemed like a devastated wasteland.

Second, the park wildlife was affected as well. Large animals like deer and elk were seen fleeing the fire. Many smaller species were probably unable to escape. There was also concern that the destruction of habitats and the disruption of food chains would make it impossible for the animals that survived the fire to return.

Third, the fires compromised the value of the park as a tourist attraction, which in turn had negative consequences for the local economy. With several thousand acres of the park engulfed in flames, the tourist season was cut short, and a large number of visitors decided to stay away. Of course, local businesses that depended on park visitors suffered as a result.

Listening

Actually fires are natural part of ecological cycle and their role is not just destructive but also creative. That is why the “let it burn” policy is fundamentally a good one, even if it sometimes causes fires of the 1988 Yellowstone fire. Let’s look at what happened after 1988 Yellowstone fire.

First, vegetation. As you might imagine, scorched areas were in time colonized by new plants. As a matter of fact, the plants in Yellowstone became more diverse because the fire created an opportunity for certain plants that could not grow otherwise. For example, areas where the trees have been destroyed by fire could now be taken over by smaller plants that needed open and shaded space to grow. And another example, seeds of certain plants species won’t germinate unless they’re exposed to very high levels of heat. So, those plants started appearing after the fire as well.

It’s a similar story with the animals. Not only did their population recover, but the fire also created new opportunities. For instance, the small plants that replaced trees after the fire created an ideal habitat for certain small animals like rabbits and hares. And when rabbits and hares started thriving, so did some predators that depended on them for food. So, certain food chains actually became stronger after the fire than they were before.

And last, fires like 1988 Yellowstone fire would be a problem for tourism if they happened every year. But they don't. It was a very unusual combination of factors that year, low rainfall, unusually strong winds, accumulation of dry undergrowth that caused fire to be so massive. This combination has not occurred since and Yellowstone has not seen such a fire since 1988. Visitors came back to the park next year and each year after that.



TPO21

Reading

Genetic modification, a process used to change an organism's genes and hence its characteristics, is now being used to improve trees through genetic modification. It is possible to create trees that produce more fruit, grow faster, or withstand adverse conditions. Planting genetically modified trees on a large scale promises to bring a number of benefits.

First, genetically modified trees are designed to be hardier than nature trees; that is, they are more likely to survive than their unmodified counterparts. In Hawaii, for example, a new pest-resistant species of papaya trees has been developed in response to ring spot virus infections that have repeatedly damaged the native papaya tree population. Planting the genetically modified papayas has largely put an end to the ringspot problem.

Moreover, genetically modified trees promise to bring a number of economic benefits to those who grow them. Genetically modified trees tend to grow faster, give greater yields of food, fruit, or other products and be hardier. This allows tree farmer to get faster and greater returns on their farming investment and save on pesticides as well.

Finally, the use of genetically modified trees can prevent overexploitation of wild trees. Because of the growing demand for firewood and building timber, many forests around the world are being cut down faster than they can be replaced. Introducing genetically modified trees, designed for fast growth and high yield in given geographic conditions, would satisfy the demand for wood in many of those areas and save the endangered native trees, which often include unique or rare species.

Listening

Sure, there are some benefits to plant genetically modified trees, but, are these trees as really great as they first sound? When you examine the subject firstly, there are some serious problems and costs associated with genetically modified trees.

First, genetically modified trees may be resistant to one particular condition. But that doesn't necessarily ensure their survival. You see, a typical non modified trees' population is genetically diverse. That means that for most threatening conditions, or climate, whatever, there will be at least some individual tress of any given species of tree that are resistant. So even if most of one kind of trees are killed, those few resistant tress will survive and ensure the survival of that species of tree. But genetically modified trees are genetically much more uniform. So if they're exposed to an environmental challenge they have not been designed for, they all die. So if the climate changes, the genetically modified trees will likely to be completely wiped out.

Now as to the second point, they're hidden costs associated with genetically modified trees. You see, the company that genetically modify the tree can charge tree farmers more for its seeds than un- genetically modified trees would cost. Also, as you've grown the tree, you can't just collect the seeds and plant the new tree for free. By law, you have to pay the company every time you plant.

And finally, genetically modified trees might actually cause even more damage to the local wild trees. You see, genetically modified trees often grow more aggressively than natural trees do. And, genetically modified trees are typically planted among natural trees. As a result, the genetically modified trees outcompete the native trees for resources, sunlight, soil, nutrients, and water, eventually crowding out the natural trees.



TPO22

Reading

Ethanol fuel, made from plants such as corn and sugar cane, has been advocated by some people as an alternative to gasoline in the United States. However, many critics argue that ethanol is not a good replacement for gasoline for several reasons.

First, the increased use of ethanol fuel would not help to solve one of the biggest environmental problems caused by gasoline use: global warming. Like gasoline, ethanol releases carbon dioxide into the atmosphere when it is burned for fuel and carbon dioxide is greenhouse gas: it helps trap heat in the atmosphere. Thus, ethanol offers no environmental advantage over gasoline.

Second, the production of significant amounts of ethanol would dramatically reduce the amount of plants available for uses other than fuel. For example, much of the corn now grown in the United States is used to feed farm animals such as cows and chickens. It is estimated that if ethanol were used to satisfy just 10 percent of the fuel needs in the United States, more than 60 percent of the corn currently grown in the United States would have to be used to produce ethanol. If most of the corn were used to produce ethanol, a substantial source of food for animals would disappear.

Third, ethanol fuel will never be able to compete with gasoline on price. Although the prices of ethanol and gasoline for the consumer are currently about the same, this is only because of the help in the form of tax subsidies given to ethanol producers by the United States government. These tax subsidies have cost the United States government over \$11 billion in the past 30 years. If the United States government were to stop helping producers in this way, the price of ethanol would increase greatly.

Listening

Ethanol actually is a good alternative to gasoline, although you just read three reasons why it's not a good alternative, not one of these three reasons is convincing.

First, the increased use of Ethanol fuel will not add to global warming. It's true that, when Ethanol is burned, it releases carbon dioxide into the atmosphere, but as you read, Ethanol is often made from plants such as corn. Well, the process of growing the plants counteracts this release of carbon dioxide. Let me explain. Every growing plant absorbs carbon dioxide from the air as part of its nutrition. So growing plants for Ethanol production actually removes carbon dioxide from the atmosphere.

Second, large scale production of Ethanol doesn't have to reduce the sources of food for animals. That's because we can produce Ethanol using cellulose, cellulose is the main component of plants' cell walls, and you'll find most cellulose in those parts of plants that are not eaten by animals. So, since we can produce Ethanol from the plant parts that aren't eaten, the amount of animal feed that is available will not be reduced.

Third, in the future, Ethanol will be able to compete with gasoline in terms of price. It's true that government subsidies make Ethanol cheaper than it would normally be, but this support won't always be needed. Once enough people start buying Ethanol, Ethanol producers will increase their production of Ethanol. Generally, increased production of products leads to a drop in its price. So the price of Ethanol will go down as more of it becomes available. Studies show that, if Ethanol production could be three times greater than it is now, the cost of producing a unit of Ethanol will drop by forty percent.



TPO23

Populations of the yellow cedar, a species of tree that is common in northwestern North America, have been steadily declining for more than a century now, since about 1880. Scientists have advanced several hypotheses explain this decline.

One hypothesis is that the yellow cedar decline may be caused by insect parasites, specifically the cedar bark beetle. This beetle is known to attack cedar trees; the beetle larvae eat the wood. There have been recorded instances of sustained beetle attacks overwhelming and killing yellow cedars, so this insect is a good candidate for the cause of the tree's decline.

A second hypothesis attributes the decline to brown bears. Bears sometimes claw at the cedars in order to eat the tree bark, which has a high sugar content. In fact, the cedar bark can contain as much sugar as the wild berries that are a staple of the bears' diet. Although the bears' clawing is unlikely to destroy trees by itself, their aggressive feeding habits may critically weaken enough trees to be responsible for the decline.

The third hypothesis states that gradual changes of climate may be to blame. Over the last hundred years, the patterns of seasonal as well as day-to-day temperatures have changed in northwestern North America. These changes have affected the root systems of the yellow cedar trees: the fine surface roots now start growing in the late winter rather than in the early spring. The change in the timing of root growth may have significant consequences. Growing roots are sensitive and are therefore likely to suffer damage from partial freezing on cold winter nights. This frozen root damage may be capable of undermining the health of the whole tree, eventually killing it.

Listening

Unfortunately, we still don't know what's killing the yellow cedar, none of the explanations discussed in the reading is adequate.

First, the cedar bark beetle. Well, the problem with this explanation is that healthy yellow cedars are generally much more resistant to insect infestation than other tree species. For example, the bark and leaves of yellow cedar are saturated with powerful chemicals that are poisonous to insects. So, healthy cedars are unlikely to suffer from insect damage. So, how can we explain those dead cedars that were infested with beetles. In those cases, the beetles attack trees that were already damaged or sick, and would've probably died anyway. So, the beetles are not the fundamental cause responsible for the decline of yellow cedars.

Second, although bears damage some trees, there're not the cause of the overall population decline. Yellow cedar population's been declining all across the northwestern coast of North America both on the mainland and on islands just off the coast. There were no bears on the islands, yet the islands cedars are still in decline. Since the decline occurs with and without bears, the bears cannot be responsible.

And finally, the theory about roots suffering from frost damage, well, the reading passage forgot to take one factor into

account. Many more trees are dying at lower elevations where it is warm than at higher elevations where it is cold. If freezing damage were responsible for the decline, we could expect to see more trees dying in the cold weather of higher elevations. Instead, more trees are dying in the relative warmth of the lower elevations. So, although the climate change may have made the cedar roots more sensitive than it used to be, this isn't what's killing them.



TPO24

Reading

Animal fossils usually provide very little opportunity to study the actual animal tissues, because in fossils the animals' living tissues have been largely replaced by minerals. Thus, scientists were very excited recently when it appeared that a 70-million-year-old fossil of Tyrannosaurus rex (T. rex), a dinosaur, might still contain remains of the actual tissues of the animal. The discovery was made when researchers deliberately broke open the T. rex's leg bone, thereby exposing its insides to reveal materials that seem to be remains of blood vessels, red blood cells, and collagen matrix.

First, the breaking of the fossilized leg bone revealed many small branching channels inside, which probably correspond to hollows in the bones where blood vessels were once located. The exciting finding was the presence of a soft, flexible organic substance inside the channels. This soft substance may very well represent the remains of the actual blood vessels of T. rex.

Second, microscopic examination of the various parts of the inner bone revealed the presence of spheres that could be the remains of red blood cells. Tests showed that the spheres contained iron—a material vital to the role of red blood cells in transporting oxygen to tissues. Moreover, the spheres had dark red centers (substances with iron tend to be reddish in color) and were also about the size of red blood cells.

Third, scientists performed a test on the dinosaur leg bone that showed that it contained collagen. Collagen is a fibrous protein that is a main component of living bone tissue, in which it forms a so-called collagen matrix. Collagen (or its chemical derivatives) is exactly the kind of biochemical material that one would expect to find in association with bone tissue.

Listening

As much as we would like to have the remains of actual dinosaur tissue, there are sound reasons for being skeptical of the identifications made in the reading.

First, the soft, flexible substance inside the bone channels isn't necessarily the remains of blood vessels. It is much more likely to be something else. Like what? You might say. Well, long after an organism is died, bacteria sometimes colonize hollows, empty areas in bones, like the channels that once held blood vessels. When bacteria lived inside bones, they often leave behind traces of organic material. What the researchers in the reading are identifying as blood vessels might just be traces of soft and moist residue left by bacteria colonies.

All right. What about the iron-filled spheres? Well, the problem is that scientists found identical reddish spheres in fossils of other animals found in the same place. That includes fossils of primitive animals that did not have any red blood cells when they were alive. Clearly, if these spheres appear in organisms that did not have any red blood cells, then the spheres cannot be the remains of red blood cells. The spheres probably have a very different origin. They are probably just pieces of reddish mineral.

Third, the collagen. The problem is that we have never found collagen in animal remains that are older than one hundred

thousand years. Collagen probably cannot last longer than that. Finding collagen from an animal that lived seventy million years ago would really contradict our ideas about how long collagen can last. It is just too improbable. The most likely explanation for the presence of collagen is that it doesn't come from the T.rex, but from another much more recent source. For example, human skin contains collagen, so the collagen may have come from the skin of the researchers who are handling the bone.



TP025

Reading

In 1938 an archaeologist in Iraq acquired a set of clay jars that had been excavated two years earlier by villagers constructing a railroad line. The vessel was about 2,200 years old. Each clay jar contained a copper cylinder surrounding an iron rod. The archaeologist proposed that vessels were ancient electric batteries and even demonstrated that they can produce a small electric current when filled with some liquids. However, it is not likely that the vessels were actually used as electric batteries in ancient times.

First of all, if the vessels were used as batteries, they would probably have been attached to some electricity conductors such as metal wires. But there is no evidence that any metal wires were located near the vessels. All that has been excavated are the vessels themselves.

Second, the copper cylinders inside the jars look exactly like copper cylinders discovered in the ruins of Seleucia, an ancient city located nearby. We know that the copper cylinders from Seleucia were used for holding scrolls of sacred texts, not for generating electricity. Since the cylinders found with the jars have the same shape, it is very likely they were used for holding scrolls as well. That no scrolls were found inside the jars can be explained by the fact that the scrolls simply disintegrated over the centuries.

Finally, what could ancient people have done with the electricity that the vessels were supposed to have generated? They had no devices that relied on electricity. As batteries, the vessels would have been completely useless to them.

Listening

Your reading says that these vessels were not used as batteries in ancient times, but the arguments used in the reading are not convincing. The battery explanation could very well be correct.

First, about the absence of wires or other conductors. Remember, vessels were discovered by local people, not archaeologists. These people might have found other material located near the jars. But since they were not trained archaeologists, they may not have recognized the importance of that material. So materials serving as wires or conductors might have been overlooked as uninteresting or even thrown away. We'll never know.

Second, it is true that the copper cylinders in the vessels are similar to the cylinders used to hold scrolls, but that does not really prove anything. It's possible that the copper cylinders were originally designed to preserve scrolls. And that some ancient inventor later discovered that if you use them together with iron rods and some liquid in a clay vessel, they will produce electricity. That's how the first ancient battery could have been born. In other words, the copper cylinders could have been originally used for one purpose, but then adapted for another purpose.

Finally, there's the question of the possible uses of the battery in the ancient world. Well, the battery could produce a mild shock or tingling sensation when someone touched it. This could very well have been interpreted as evidence of some invisible power. You can easily see how people could convince others that they had magical powers through the use of the battery. Also, the battery could have been used for healing. Modern medicine uses mild electric current to stimulate muscles and relieve aches and pains. Ancient doctors may have used the batteries for the same purpose.

TP026

Reading

The zebra mussel, a freshwater shellfish native to Eastern Europe, has long been spreading out from its original habitats and has now reached parts of North America. There are reasons to believe that this invasion cannot be stopped and that it poses a serious threat to freshwater fish populations in all of North America.

First, the history of the zebra mussel's spread suggests that the invasion might be unstoppable. It is a prime example of an invasion made possible by human transportation. From the zebra mussel's original habitats in Eastern Europe, ships helped spread it out along new canals built to connect Europe's waterways. The mussel can attach itself to a ship's bottom or can survive in the water—called "ballast water"—that the ship needs to take on to properly balance its cargo. By the early nineteenth century, the mussel had spread to the whole of Europe. It was later carried to the east coast of North America in the ballast water of ships traveling from Europe. The way ships have spread the zebra mussel in the past strongly suggests that the species will soon colonize all of North America.

Moreover, once zebra mussels are carried to a new habitat, they can dominate it. They are a hardy species that does well under a variety of conditions, and they have a high rate of reproduction. Most important, however, zebra mussels often have no predators in their new habitats, and species without natural predators are likely to dominate their habitats.

Finally, zebra mussels are likely to cause a decline in the overall fish population in habitats where they become dominant. The mussels are plankton eaters, which means that they compete for food with many freshwater fish species.

Listening

Narrator

Now listen to part of a lecture on the topic you just read about.

Professor

Contrary to what you just read, there are ways to control the zebra mussel's spread. What's more, it is not so clear that the mussel is a serious threat to fish populations.

True, the spread of zebra mussels couldn't be controlled in the past, but that's because people didn't have enough knowledge. In fact, there are effective ways to stop ships from carrying the mussels to new locations. Here's an example. The way zebra mussels usually travel across the ocean is that a ship takes on some fresh "ballast water" in Europe and then empties that water into American waterways when it arrives. Full of zebra mussels, but the ship can be required to empty out the freshwater and refill with ocean water while still out in the ocean. Salt water will kill the mussels.

Second, it's true that zebra mussels often don't have predators in their new habitats, but that's only in the beginning. What's been happening in Europe is that local aquatic birds sooner or later notice there's a new food source around and change their habits to exploit it. They switch from whatever they were eating before to eating zebra mussels. And birds can eat a lot of mussels. So zebra mussels aren't so likely to dominate their new habitats after all.

Finally, even in habitats where zebra mussels become dominant, is the overall fish population likely to decrease. It's true that zebra mussels may have a negative impact on fish that eat plankton. But on other fish, they can have a positive impact. For example, the mussels generate nutrients that are eaten by fish that feed near the bottom of the lake or river. So

bottom-feeding fish populations may increase, even if plankton-eating fish population decrease.



TPO27

Reading

The little ice age was a period of unusually cold temperature in many parts of the world that lasted from about the year 1350 until 1900CE. There were unusually harsh winters, and glaciers grew larger in many areas. Scientist have long wondered what caused the Little Ice Age. Several possible causes have been proposed.

First, the cooling may have been caused by disrupting of ocean currents. Before the Little Ice Age, there was a period of unusually warm weather during which glaciers melted. These melted glaciers sent a large amount of cold freshwater into the Gulf Stream, a large ocean current that strongly affects Earth's climate. Some scientists believe that this freshwater was enough to temporarily disrupt the Gulf Stream. Such a disruption could have caused the Little Ice Age.

Second, volcanic eruption could have caused the Little Ice Age. When volcanoes erupt, they send dark clouds of dust and sulfur gas into the atmosphere. These clouds, which can spread over great areas, block some sunlight from reaching Earth's surface. This can decrease the global temperatures. Scientists know of several volcanic eruption that took place during the Little Ice Age.

Third, substantial decreases in human populations may have contributed indirectly to the cooling of the climate. For a variety of reason(disease, warfare, social disruption), the human population just before the Little Ice Age and during the early part of it was lower than it had been in a long time. Forest trees started growing on fields that were no longer used for agriculture. Since trees absorb carbon dioxide, a greenhouse gas, they decrease the greenhouse effect that keeps Earth warm. With more forest trees carbon dioxide, earth became cooler.

Listening

Unfortunately, the arguments of the reading passage are a little out of date. Scientists now have new information that shows that none of the ideas the reading passage discusses could account for the Little Ice Age.

First, about the Gulf Stream. Scientists now know that disrupting the Gulf Stream would cause cooling only in Europe and North America, but the Little Ice Age also affected the Southern hemisphere, in places like New Zealand and Southern Africa for example. Since the disruption of the Gulf Stream cannot explain why these southern areas became colder, it cannot explain the Little Ice Age.

Second, the volcanoes theory. It's true that if volcanic eruptions put enough dust into the atmosphere, the result can be a cooler climate. But large amounts of volcanic dust in the atmosphere would have also produced striking visual effect that people would have noticed at the time. For example, Dramatically colorful Sunsets or snow being grey or brown instead of white. But there are almost no reports of anything like that routinely happening during the Little Ice Age. So it seems that the volcanic eruptions during that period were simply not strong enough to release the large amounts of dust needed to lower global temperatures.

Third, about forests on farmland stopping the warming greenhouse effect by removing carbon dioxide. There just was not enough time for this effect to work. The human population grew back to previous levels fairly quickly, which meant that forests were soon being cut down again to clear fields for the crops needed to feed the growing population. As a result, we know that the forests mentioned in the reading passage were not there long enough to cause the long—term global cooling of the climate.

TPO28

Narrator

Now listen to part of a lecture on the topic you just read about.

Professor

There's no solid evidence that [Robert Peary](#) reached the North Pole. The arguments cited in the reading selection are not convincing.

First, it is true that the National Geographic Society committee declared that Peary had indeed reached the North Pole, but the committee was not completely objective. In fact, the committee was composed of Peary's close friends who had contributed large sums of money to fund Peary's trip. Moreover, the investigation lasted only two days. And according to Peary himself, the committee did not examine his records carefully. So the committee's conclusions seem biased and therefore are not trustworthy.

Second, the speed issue. Tom Avery's journey was different from Peary's in important ways. For example, Avery's sled was similar to Peary's sled, but Avery carried much less weight than Peary did, because Avery did not transport his food on the sled. Avery's food was dropped along the way by airplane. Moreover, Avery encountered highly favorable weather conditions, unlike Peary who travelled in very unfavorable conditions. So Avery's speedy trip was too different from Peary's to provide support for Peary's claims.

Third, the photographs do not prove anything. The techniques scientists use to determine the Sun's position depend on measuring the shadows in the photographs very precisely. Without a precise measurement of the shadows, we cannot establish the Sun's exact position. Now, Peary's pictures were photographed a hundred years ago using a primitive camera that took fuzzy, slightly unfocused photographs. Moreover, the photos have become faded and worn over time. As a result, the shadows in Peary's photographs look blurred and faded. Those shadows cannot be used to calculate the position of the Sun with great accuracy. So we cannot be confident the photos were really taken at the North Pole.

TPO29

Narrator

Now listen to part of a lecture on the topic you just read about.

Professor

The hypothesis that the Edmontosaur migrated every winter is not convincing.

First, the Edmontosaur did not have to migrate to find food. One hundred million years ago, the summer temperatures in the North Slope area were warmer than they are today. And remember, in arctic regions like the North Slope, the Sun shines 24 hours a day at the peak of the summer. The warm temperatures and extensive daylight created incredibly good growing conditions for plants, so much vegetation was produced during the summer that when the vegetation died as the winter came, there was a lot of nutritious dead vegetation around in the winter. The Edmontosaur could have easily lived on the dead plant matter during the winter.

Second, just because Edmontosaurs lived in herds doesn't mean they migrated. Animals live in herds for many other reasons. Living in herds, for example, provides animals with extra protection from predators. Having extra protection is useful even for the animals that live in the same area the whole year round. A modern example of this is the Roosevelt elk—a large plant-eater. Roosevelt elks live in the forests of the western United States. They live in herds but they do not migrate.

Third, although adult Edmontosaurs were capable of migrating long distances, what about Edmontosaurs that were not yet adults? Juvenile Edmontosaurs were not physically capable of travelling the great distances required to reach warmer territories and would have slowed the herd so much that the herd never would have made it to its destination. The herd could not have left the juveniles behind because the juveniles would not have survived on their own. So the whole herd had to stay where they were and survive on the cold North Slope.

TPO30

Narrator

Now listen to part of a lecture on the topic you just read about.

Professor

The claims that the burning mirror would have been impractical and technologically impossible are unconvincing.

First, the Greeks did not need to form a single sheet of copper to make a large, burning mirror. An experiment has shown that dozens of small individually flat pieces of polished copper could be arranged into a parabolic shape and form a large, burning mirror. The Greek mathematicians know the properties of the parabola and so could have directed the assembly of small mirror pieces into the parabolic shape.

Second, about how long it would take to set a ship on fire with a burning mirror. The experiment the reading selection mentions assumes that the burning mirror was used to set the wood of the boat on fire, that's what takes ten minutes. But Roman boats were not made just of wood. There were other materials involved as well. For example, to seal the spaces between wooden boards and make them waterproof, the ancient boat-builders used a sticky substance called pitch. Pitch catches fire very quickly. An experiment showed that pitch could be set on fire by a burning mirror in seconds. And once the pitch was burning, the fire would spread to the wood even if the ship was moving. So a burning mirror could have worked quickly enough to be an effective weapon.

Third, why bother with a burning mirror instead of flaming arrows? Well, Roman soldiers were familiar with flaming arrows and would have been watching for them and were ready to put out the fires they might cause. But you cannot see the burning rays from a mirror; you just see the mirror. But then suddenly and magically a fire starts at some unobserved place on the ship that would have been much more surprising and therefore much more effective than a flame arrow.

TPO 31

Reading

A fossil skeleton of a dinosaur called *Sinosauroptryx*, preserved in volcanic ash, was discovered in Liaoning, China, in 1996. Interestingly, the fossil included a pattern of fine lines surrounding the skeletal bones. Some paleontologists interpret the lines as evidence that *Sinosauroptryx* was a feathered dinosaur, citing several reasons.

First, the critics points out that the fine lines may not even represent functional structures of a living dinosaur, but rather structures that were formed after the animal's death. After the animal died and was buried in volcanic ash, its skin may have decomposed into fibers. The skin fibers then became preserved as lines in fossils; the lines were misinterpreted as evidence of feathers.

Second, even if the fine lines are remains of real structures of a *Sinosauroptryx*, scientists cannot tell with certainty what part of the dinosaur's anatomy the structures were. Many dinosaurs had frills, ornamental fan-shaped structures growing out of some parts of their bodies. Some of the critics argue that the lines surrounding the skeleton are much more likely to be fossilized remains of frills than remains of feathers.

A third objection is based on the fact that the usual functions of feathers are to help animals fly or regulate their internal temperature. However, the structures represented by the lines in the *Sinosauroptryx* fossil were mostly located along the backbone and the tail of the animal. This would have made the structures quite useless for flight and of very limited use in thermoregulation. This suggests that the lines do not represent feathers.

Narrator

Now listen to part of a lecture on the topic you just read about.

Professor

The evidence that the lines in the *Sinosauroptryx* fossil represent feathers is very strong. The arguments of the critics are unconvincing.

First, it is unlikely that the lines are a result of the decomposition of the dinosaur's skin, because we don't see any such decomposition in the fossils of other animals buried at the same site. In fact, the fossils of many other animals buried at the site show evidence that their functional skin structures have been beautifully preserved in volcanic ash. The well-preserved condition of the other fossils makes it likely that the *Sinosauroptryx*'s lines are also well-preserved functional structures, possibly feathers, and that they are not fibers caused by decomposition.

Second, the idea that the lines represent frills... well, there is an important chemical difference between feathers and frills. Feathers contain a great deal of a protein called Beta-keratin. Frills, on the other hand, do not contain beta-keratin. Our chemical analyses suggest that the *Sinosauroptryx* structures did contain beta-keratin. So that indicates that the structures were feathers, not frills.

Third, feathers can be used for other functions than flight and thermoregulation. Think of a bird, like peacock, for example. The peacock has long, colorful feathers in its tail. And it displays its tail in order to attract a mate. That's a distinct function of feathers called the display function. Recently, we have been able to do analyses on the *Sinosauroptryx* structures that show us that the structures were colorful. They were orange and white. The fact that they were colorful strongly supports the idea that they were feathers that this dinosaur use for display.



TPO 32

Listening

Quackers are certainly a very strange phenomenon. Experts still debate what the source of the sounds was. No one can be sure exactly what caused them. But these experts cite certain problems with all of the theories that you just read about. Here are a few of the arguments that they make. This transcript is written by QQ 519626928 (ladynbird).

First, the idea that the sounds are caused by Orca whales seems plausible at first but is ultimately highly unlikely. It's true that there were Orca populations in the general areas that the Russian submarines were patrolling. But Orca whales mostly live near the surface of the water. The submarines typically remain deep in the ocean and should not have been able to hear the whale sounds from near the surface. Also, the Orca whales would have been detected by the Russian sonar if they were nearby.

Giant squid may be a better candidate but one critical fact speaks against the squid theory as well. Russian submarines first detected quacker sound in the 1960s and reports of them continued for about two decades. But the sounds disappeared entirely by the 1980s. However, as far as we know, squid have always lived in the ocean where the submarines were patrolling and continue to live there today. If these were squid sounds, there would be no reason to suddenly start hearing them in one decade and then suddenly stop hearing them twenty years later.

Third, the idea that the quackers were caused by a secret submarine from another country does not hold up. The sources of the sounds appeared to move around and change direction very quickly. Submarines cannot move or change direction that quickly. Also, all submarines make some engine noise. But no such noise accompanied the quackers. Even today, we don't have technology to build submarines that are that fast and have engines that are that silent.

TPO 33

Listening

None of the three theories presented in the reading passage are very convincing.

First, the stone balls as hunting weapons, common Neolithic weapons such as arrowheads and hand axes generally show signs of wear, so we should expect that if the stone balls had been used as weapons for hunting or fighting, they too would show signs of that use. Many of the stone balls would be cracked or have pieces broken off. However, the surfaces of the balls are generally well preserved, showing little or no wear or damage.

Second, the carved stone balls maybe remarkably uniform in size, but their masses vary too considerably to have been used as uniform weights. This is because the stone balls were made of different types of stone including sandstone, green stone and quartzite. Each type of stone has a different density. Some types of stone are heavier than others just as a handful of feathers weighs less than a handful of rocks. Two balls of the same size are different weights depending on the type of stone they are made of. Therefore, the balls could not have been used as a primitive weighing system.

Third, it's unlikely that the main purpose of the balls was as some kind of social marker. A couple of facts are inconsistent with this theory. For one thing, while some of the balls are carved with intricate patterns, many others have markings that are extremely simple, too simple to make the balls look like status symbols. Furthermore, we know that in Neolithic Britain, when someone died, particularly a high-ranking person, they were usually buried with their possessions. However, none of the carved stone balls have been actually found in tombs or graves. That makes it unlikely that the balls were personal possessions that marked a person's status within the community.

纸质版 TPO4

听力原文:

Narrator

Now listen to part of a lecture on the topic you just read about.

Professor

Many people think that if you want to go into business for yourself, it's best to buy a franchise. But recently a study looked closely at franchises, and some of the findings call that idea into question.

One interesting point was that many franchise contracts force franchise owners to . . . to buy very specific goods and services, and those goods and services tend to be overpriced. In other words, even though there are equivalent goods and services available on the market, uh, that are considerably cheaper, the owners aren't allowed to buy them.

Another point was about advertising. When you buy a franchise, you agree to pay up to six percent of your sum total in sales—that's quite a lot of money. One thing you're supposed to get in return for this money is that the company does the advertising for you. But the company doesn't advertise your business. What gets advertised is the company's brand, the company's products, which are sold by many other businesses in many other places. It turns out, individual franchise owners mostly get very little benefit—much less than they would get by spending even half that money to advertise their own business directly.

Finally, the biggest issue: security. Starting a franchise is not the most secure option out there. True, it's less risky than starting an independent business. But there's a third option that the passage didn't talk about. You can buy an already existing independent business from a previous owner. And the study showed that independent businesses bought from previous owners have twice as much chance of success during the first four years as franchises.

纸质版 TPO5

听力原文:

Narrator

Now listen to part of a lecture on the topic you just read about.

Professor

Even if computerized smart cars meet all the technological expectations set for them, it's not clear that they'd produce the benefits some have predicted.

Smart cars will still get into some accidents. After all, even the most technologically advanced devices fail occasionally. And since the smart car technology will allow cars to be more tightly packed together on the roads, these accidents will be pileups that involve many more cars and so be much worse than accidents that occur today. Overall, there is little reason to believe that smart cars will save lives or reduce the number of injuries in automobile accidents.

Second, let's talk about the potential to increase highway speeds and therefore decrease commuting time. Well, history has consistently shown that when some driving convenience is introduced, more and more people decide to drive because they expect an easier driving experience. But then the increased number of drivers in the case of smart cars of the future would not decrease commuting time. This is because the traffic congestion caused by the additional cars on the road would not allow the drivers to take advantage of the smart cars' potential for higher speeds.

And finally, it's not reasonable to expect that smart cars will save drivers money. The global positioning technology required to direct smart cars to their desired destinations is very expensive, and smart cars will need other costly technologies too, such as sensors that control how far a smart car stays behind the car in front of it. Moreover, the advanced technology of smart cars will make repairs to them more expensive than repairs on conventional automobiles. These new expenses will more than offset the expected savings on the repair and replacement of traditional mechanical car parts.

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