2017年度 2月14日実施 文学部英米文学科B方式
Listening and Composition

PART I.

The word "university" comes from Latin. It refers to a number of persons associated into one body, a (1a) society , (1b) company , or community. When towns emerged in the Middle Ages in Europe, associations of students and teachers began. Like medieval associations of tailors, and shoemakers, and other trades, these associations regulated themselves and determined the (2) qualifications of their members, in this case, by granting (3a) university (3b) degrees . From Western and Central Europe, this form of (4) organization spread around the world.

One of the most important ideas in this (5) definition of a university originated in Italy in 1158. It was the idea of (6a) academic (6b) freedom . It guaranteed the right of a (7a) traveling (7b) scholar to pass freely from place to place in the interests of education.

At first, European higher education took place in Christian churches in which monks and nuns taught classes. These (8a) educational (8b) institutions date back to the 6th century. In fact, the famous University of Paris developed from one.

All over Europe, kings, princes, and (9a) city (9b) governments began to create universities to satisfy a European thirst for knowledge. They also believed that society would benefit from the (10) expertise generated by these institutions.

PART II.

Part of the knowledge generated by early universities was the discovery of Aristotle's works -- more than 3,000 pages of his writing would eventually be translated. His writing on nature fueled a spirit of inquiry that was emerging in the 12th century.

Some scholars believe that these works represented one of the most important document discoveries in Western intellectual history. Richard Dales, for instance, calls the discovery of Aristotle's works "a turning point in the history of Western thought." After Aristotle re-emerged, a community of scholars tried to

reconcile the ideas of the ancient Greeks, especially their understanding of the natural world, with those of the church.

Promoting these texts was greatly assisted by the invention of the printing press and the use of German, English, and other common languages instead of Latin. These two developments enabled printers to produce books at reasonable prices and to sell them to a large number of people.

The university culture developed differently in northern Europe than it did in the south. Universities in Germany, France and Great Britain had many elements in common and they granted bachelors' degrees. Universities in Italy granted doctors' degrees. Latin was the official language of the university, used for all texts, lectures, and examinations. Professors lectured on the books of Aristotle for logic, nature, and philosophy. Other Greek philosophers were consulted for the study of medicine.

Emerging scientific discoveries likely began in universities as more than 80% of the European scientists between 1450–1650 who were included in *The Dictionary of Scientific Biography* were university trained. There was considerable reluctance on the part of universities to abandon some of the ideas described by Aristotle, even though many of these were incorrect. But when they did accept new ideas, the universities helped promote them. The universities also provided a stable environment for instruction and material resources.

By the 18th century, universities published their own research journals. By the 19th century, the German and the French university models had arisen. German universities emphasized the importance of academic freedom, seminars, and experiments. French universities emphasized strict discipline and control over every aspect of the university.

PART III.

As a schoolboy, I wanted to be a doctor. Then I read a book by the journalist Horace Judson. This wonderful chronicle of the birth of molecular biology put an end to my medical ambitions. I made up my mind then and there to pursue biochemistry at the University of Vienna. Not everyone was enthusiastic about my decision. My parents were unhappy about my move away from a career as a medical doctor with its good salary and high position in society. Their only child was now going to study a subject that, as far as they were concerned, had mostly to do with making beer and wine.

At the University of Vienna the emphasis of my studies gradually changed. I loved physics in the first year and chemistry in the second year. In the third year, I was lucky enough to attend a class in theoretical chemistry by Peter Schuster, who helped to establish the Viennese school of mathematical biology and who, later, would become the president of the Austrian Academy of Sciences. I knew immediately that I wanted to work with Peter. In the fourth year, I began to study with him in order to write a thesis. He was supremely knowledgeable and his interests extended well beyond science. We occasionally went mountain climbing together, for example.

The moment I realized I was completely in love with mathematics came a year later, while mountain climbing with Peter. It was in 1988, during my early days as a graduate student, and I was on a study trip with other students and professors. Our group was staying in a small wooden house in the Austrian mountains to enjoy fresh air, work, and play. We skied, we listened to lectures, we drank beer and wine, and we contemplated the mysteries of life. Best of all, we discussed new problems and theory, whether in the warmth of the little house or outside, in the cold mountain air. The experience was very exciting.

The bright-eyed students in the group were mixed with impressive professors. Among them was Karl Sigmund, a mathematician from the University of Vienna. With his wild hair, huge beard and glasses, Karl looked difficult to talk to. He was cool, more like a student than a professor. Karl would deliver all his lectures from memory. On the last day of the study trip, he gave a talk on a fascinating problem related to cooperation which he had read about in a recent newspaper article.

The article described work in a field known as game theory. Most historians give the credit for developing and popularizing this field to the great mathematician John von Neumann, who published his first paper on the subject in 1928. Von Neumann went on to apply his ideas to economics with the help of Oskar Morgenstern, an Austrian economist who had fled Nazi Germany to work in the United States.

In his talk, Karl described the latest work that had been done on the Prisoner's Dilemma, an interesting game devised at RAND Corporation in 1950. Karl was excited about the Dilemma because it is a powerful mathematical model of a struggle that is central to life, between conflict and cooperation, between the individual and the collective good.

In short, the Prisoner's Dilemma describes a situation where two individuals interact. The interaction results in outcomes with positive or negative results for each individual. Each must choose between helping the other and not helping. If each player helps the other, they both get a reasonably good result. However, given that only one person is uncooperative, that person gets a better result than he would if he cooperated. It is therefore rational not to cooperate; however, if both players are uncooperative, the result is bad for both. The structure of this game is reflected in many areas of life: helping competitors in business, making sacrifices for one's family, deciding how to use common resources, and so on.

I was fascinated by this problem. Karl had no transport back to Vienna and I offered him a ride in my car. We discussed the Dilemma as we drove back the next day, and even after I dropped him off, I kept him in my mind. Before long, I was studying with him at the Institute for Mathematics in Vienna. As I pursued my studies, Karl and I would often meet in local coffeehouses. As we drank strong coffee and chatted about how to solve the Prisoner's Dilemma, Karl and I didn't realize that in the decades that followed, we would invent new mathematics to explore it. We would create computer models of groups of people in the Prisoner's Dilemma, study how they evolved, and conduct analyses to reveal the mechanisms needed to solve the Dilemma. I would establish teams at Oxford, Princeton and Harvard as well as collaborations with mathematicians, biologists, chemists, doctors and economists around the world to understand how these mechanisms worked and what their wider implications were.

For the Dilemma to tell us something useful about the biological world, we need to place it in the context of evolution.

Evolution can only take place in groups of reproducing individuals. In these groups, mistakes in reproduction lead to mutations. The resulting new types of individuals might have an advantage in terms of survival: they might reproduce better or faster and thrive. In this context, we can think about the outcomes of the Dilemma in terms of what evolutionary scientists call "fitness." In this evolutionary context, cooperation in the Dilemma means lowering my fitness and increasing yours.

Now we can see that there is a fundamental problem in evolution. Evolution works via natural selection, as Charles Darwin showed, meaning that those individuals who do best in terms of fitness have the most chance for reproduction. Natural selection opposes cooperation in the simple Prisoner's Dilemma. At its heart, natural selection undermines our ability to work together. In a group with an equal mix of cooperators and non-cooperators, the cooperators have a lower fitness, and so are less likely to survive. The result over time is the disappearance of the cooperators, leaving only non-cooperators, even though a group of cooperators has a higher fitness than one of non-cooperators.

Natural selection destroys what would be best for the entire population; it undermines the greater good. For cooperation to arise, other mechanisms are needed to ensure it. We know that they exist because we see the results all around us: from the cooperative behavior found in communities of bees and ants to those found in human societies. Evolution has used these mechanisms to overcome the limitations of natural selection. Over millions of years they have shaped genetic evolution. Nature smiles on cooperation.

2017年度 LB

Listening and Composition

注　意

1. この冊子は全部で7ページ，解答用紙は全部で3枚である。
2. 解答用紙に氏名・受験番号を忘れずに記入すること。
3. 解答はすべて解答用紙(Answer Sheet)に記入すること。
4. 問題冊子の余白等は適宜利用してよいが，どのページも切り離してはいけない。
5. 解答用紙は必ず提出すること。この問題冊子は提出する必要はない。
6. 音声が流れている間は，できるだけ物音をたてないようにすること。

Listening and Composition

A. Listening

The listening section has 3 parts. In Part Ⅰ, you must fill in the blanks. In Part Ⅱ, you will need to write your answers in phrases or sentences. In Part Ⅲ, you will have to answer multiple choice questions. All your answers should be based on the content that you will be hearing shortly.

Part I. Intensive Listening.

Listen to the first part and fill in the blanks. You will hear this section twice. Now, before we start, read carefully over Part I in the exam booklet for 2 minutes. (Use Answer Sheet 1.)

The word "university" comes from Latin. It refers to a number of persons associated into one body, a (1a), (1b), or community. When towns emerged in the Middle Ages in Europe, associations of students and teachers began. Like medieval associations of tailors, and shoemakers, and other trades, these associations regulated themselves and determined the (2) of their members, in this case, by granting (3a) (3b). From Western and Central Europe, this form of (4) spread around the world.

One of the most important ideas in this (5) of a university originated in Italy in 1158. It was the idea of (6a) (6b). It guaranteed the right of a (7a) (7b) to pass freely from place to place in the interests of education.

At first, European higher education took place in Christian churches in which monks and nuns taught classes. These (8a) (8b) date back to the 6th century. In fact, the famous University of Paris developed from one.

All over Europe, kings, princes, and (9a) (9b) began to create universities to satisfy a European thirst for knowledge. They also believed that society would benefit from the (10) generated by these institutions.

Part Ⅱ. Short Answers.

Listen to the second part of the lecture and answer in a phrase or sentence. Make sure you include all the necessary information in your answer.

Before we start, read over the questions in the exam booklet for 2 minutes. You will hear this section twice. (Use Answer Sheet 2.)

(11) What does Richard Dales call a turning point in the Middle Ages?

(12) What two developments helped promote the production of books?

(13) What were three uses of Latin at universities?

(14) What does *The Dictionary of Scientific Biography* show about European scientists?

(15) What were three things that 19th century German universities emphasized?

Part Ⅲ. Multiple Choice.

Listen to the third part and select the most appropriate answer, and circle the corresponding number on the answer sheet. Before we start, read over the questions in the exam booklet for 5 minutes. You will hear this section twice. (Use Answer Sheet 1.)

(16) How did the author's parents feel about his decision not to be a doctor?

1. Their love for beer and wine caused them to be pleased.
2. They were unhappy because they were interested in biology.
3. They were unhappy because doctors are respected in society.
4. Their love for biochemistry caused them to be pleased.

(17) Which statement about the author's study trip in 1988 is true?

1. He saw no professors there.
2. He drank beer and wine.
3. He swam in a lake in the Austrian mountains.
4. He went to the mountains by bus.

(18) In 1988, Karl Sigmund _____.

1. didn't wear glasses
2. was a professional economist
3. was a student at the University of Vienna
4. delivered his lectures without notes

(19) Karl Sigmund's talk on the study trip was about _____.

1. cooperation
2. economics
3. law
4. biochemistry

(20) Where was the Prisoner's Dilemma originally developed?

1. The University of Vienna
2. Harvard University
3. Oxford University
4. RAND Corporation

(21) A player in the Prisoner's Dilemma gets the best possible result if _____.

1. he cooperates and the other player does not
2. he doesn't cooperate and the other player does
3. both players cooperate
4. neither player cooperates

(22) The author studied with _____.

1. Charles Darwin
2. John von Neumann
3. Oskar Morgenstern
4. Karl Sigmund

(23) Which activity did the author's research involve?

1. Creating computer simulations of people and studying their evolution
2. Establishing a research team at the University of Austria
3. Collaborating with philosophers at Oxford University
4. Playing video games on the computer

(24) When the Prisoner's Dilemma is considered in terms of evolution, _____.

1. it shows that natural selection makes cooperation difficult
2. it shows that increasing fitness requires cooperation
3. little is learned about the nature of cooperation
4. a great deal is learned about business competition

(25) One major theme of the passage is that the Prisoner's Dilemma _____.

1. shows why one should never cooperate
2. is useful in understanding some aspects of the evolution of cooperation
3. caused the author to become a mathematician
4. is useful in understanding why cooperation doesn't arise in nature

B. Composition

Write a well-organized paragraph of about 100 words with specific details. (Use Answer Sheet 3.)

Describe an example of inequality in your experience or in the world and explain why you think it exists.