

受 験 番 号					

氏 名	

2017(平成29)年度
放送大学大学院博士後期課程
文化科学研究科 文化科学専攻

自然科学プログラム

筆記試験問題（英語読解試験）

試験日：2016（平成28）年10月2日（日）
試験時間：9時30分～11時30分

注意事項

1. 試験開始の合図があるまで、この問題冊子は開かないでください。
2. 解答には、HB又はBの黒鉛筆かシャープペンシルを使用してください。
3. 配付されるものは、「問題冊子1冊」「解答用紙2枚」及び「下書き用紙2枚」です。追加配付はしません。
4. 試験開始の合図の後、問題冊子を確認してください。**問題冊子は、表紙、白紙、問題（4頁）**の順に綴じられています。冊子をとじているホッチキス針をはずしたり、中身を破って取ったりしてはいけません。問題冊子または解答用紙に落丁・過不足のある場合、あるいは印刷が不鮮明な場合は、手を挙げて試験監督員の指示に従ってください。
5. 問題冊子の所定欄に、受験番号及び氏名を記入してください。
6. 解答用紙の所定欄に、所属を希望するプログラム名、氏名、受験番号及び解答用紙の何枚目であるかを、解答用紙別に必ず記入してください。
7. 解答用紙1枚につき、1,000字まで記入することができます。**解答用紙2枚のうち、自然科学プログラムは1枚で解答**してください。指定された字数を超えないよう、注意して解答してください。
8. 問題冊子、解答用紙及び下書き用紙を持ち帰ってはいけません。
9. 問題冊子は試験終了後に回収します。問題冊子に解答を記入しても採点の対象にはなりませんので、必ず解答用紙に解答を記入してください。
10. 試験時間は2時間です。試験開始から40分を経過した後は、問題冊子、解答用紙及び下書き用紙を試験監督員に提出した上で退室してもかまいません。ただし、試験終了5分前以降は退室できません。

筆記試験問題（英語読解試験）

以下の英文を読んで、下の設問に答えなさい。

For animals that live on land, all faces follow the same master plan, whether you are a snake, toad, lion, human, or dog. Faces were originally designed to control the quest for food, and since everything that an animal can put into its mouth is not necessarily edible or safe, the three major screening senses—taste, smell, and sight—are clustered near the mouth. The arrangement is always the same: taste buds in the mouth, the nostrils of the nose just above, and the eyes perched just a bit higher. This arrangement allows land animals to eat bits of food on the ground, while sniffing smells and viewing what it is eating all at the same time.

The general pattern of the face is the same for most species, but there are some differences in the eyes. Animals that are preyed upon, and whose only defense is to run, need an early warning system. For this reason, rabbits and antelope have their eyes on the sides of their heads, to give them a full panoramic view of the world, sometimes covering the full 360 degrees. This makes it very difficult for anything to sneak up on them. In predators, such as tigers or wolves, the eyes are placed facing front, like headlights. This gives the opportunity for binocular vision, which sharpens the ability to read the distance of things. Obviously, knowing how far away something is in order to pounce upon it accurately would make an animal a better hunter. Dogs are predators, so their eyes face forward as well.

(A) As human beings, we feel that the most expressive part of the body is the face, and one of the most expressive parts of the face is the eyes. Actors and film directors know the importance of eyes as a means of communication and often take advantage of it. The classic thriller director Alfred Hitchcock said, "Dialogue should simply be a sound among other sounds, just something that comes out of the mouths of people whose eyes tell the story in visual terms." He often used close-up shots in which virtually only the eyes were visible, to give a sense of menace or fear. Actor Henry Fonda felt that important messages were sent by the eyes and always insisted on having a "catchlight" for his close-ups. In the film trade this is called an "inky-dink," and it is a tiny light which is placed near the face. When an actor looks directly into it, his or her eyes glow and appear to have a deep emotional intensity.

In dogs, there are several important structural aspects of the eyes which can

provide interpretable communication. The colored part of the eye is the *iris*; the hole or dark spot in its center the *pupil*. The white portion of the eye is called the *sclera*; it is the outer covering of the eye. Finally, the visible shape of the eye is determined by the way in which the eyelids open or close.

When it comes to actual vision, the sole purpose of the iris, or colored portion of the eye, is to contract or expand to vary the size of the pupil and thus control the amount of light actually getting into the eye. In dim light, the pupil expands to gather in whatever light energy might be around, while in bright light, it contracts to prevent too much glare from washing out details of the visual scene. Pupils, however, communicate. The size of the pupil, and its dynamic changes in shape, also can come about because of emotional states.

Generally speaking, excitement, interest, or any intense emotion will expand the pupils. There are many studies which have looked at what causes pupils to expand in humans. Interest in another person is certainly one such factor. Though people are often consciously aware of the size of another person's pupils, we do pick up that there is something about their eyes that seems to suggest pleasure or interest. Since we tend to view people who are interested in us more positively, someone who looks at us with large, dilated pupils is apt to appear more attractive to us. Beginning in the Renaissance era and up through the nineteenth century, women used poisonous extracts from belladonna (also known as the deadly nightshade plant) to dilate the pupils of their eyes to make them appear more attractive to men. The very name of the plant, *Belladonna*, is Italian for "beautiful lady." In today's world, we accomplish much the same thing when we have a candlelit dinner. The dim light makes the pupils expand (to let in more light); thus we look more attractive and interested without the administrations of a toxic substance. One particularly interesting aspect of the attraction of large pupils is that we have specifically bred some of the toy dogs(*) for large eyes and large pupils. These are mostly companion dogs. The large pupils of dogs like the Cavalier King Charles spaniel or the Pekingese appear to radiate affection to the human observer.

Just as in people, the size of a dog's pupils also reflects its emotional state. The difficulty is that for dogs, pupil size is sometimes harder to read, since some breeds of dogs have very dark irises and the pupil may seem to blend into the dark surround. The (B) the irises, the easier it is to see the changes in pupil size. Even in dark eyes it is worth looking carefully, since the eyes speak quite loudly about the dog's feelings.

If large pupils indicate an intense emotion, then smaller pupils will often

indicate boredom, drowsiness, and relaxation. It is important to remember that changes in the size of a dog's pupils only reflect changes in the *intensity* of an emotion, not necessarily whether that emotion is positive or negative. Great joy and excitement can result in wide pupils, but so can great fear or anger. However, if you happen to look into a dog's eyes at the critical moment when you can actually see the pupils in the process of expanding and contracting (rather than just the final position of a large or small opening), you can get additional information. A joyful or a pleasant arousing situation results in a simple widening of the pupil. When the animal is becoming angry or aggressive, the pupils start to change size by first contracting and then expanding to their larger aroused size.

Let's turn next to the white region, or sclera, of the eye. Surprisingly, this also serves a communication function. Why should evolution have made part of the eye white? Why not simply extend the color of the iris to make the whole eye brown or blue? The reason is that the white of the eye contrasts with the color of the iris, and this makes it easier to see which direction the eyes are gazing. In humans, this is an extremely important method of communication, and for this reason we have a very large expanse of white compared to other animals.

In people, the ability to detect the direction that others are looking is socially important. It tells us who others are listening to in a conversation. It signals their intentions, since individuals tend to look in the direction they are about to move. Master salesmen say they can tell which items a person is most interested in by following the line of their gaze. When the potential customer's eyes start to flick in the direction of the exit door, they know the customer has lost interest or is bored or uncomfortable and thinking about leaving.

Looking at someone is not an innocuous event. Staring is definitely viewed as a threat. Psychologists have conducted some interesting real-world experiments to prove this. In one study, researchers stood on a street corner and gazed steadily at drivers who had stopped at a red light. They found that the vast majority of drivers noticed the stare within seconds, and when the light finally turned green, they raced across the intersection much faster than drivers who had not been stared at. In another study, the researchers had their associates stare at students in a university library, and found that the students who were stared at were more likely to pack up their things and leave the library earlier.

(*) toy dogs: 愛玩専用のペット犬

- (1) 陸生動物の顔における目の位置は、どのように二分されるか。それぞれの目的と合わせて100～120字程度の日本語で述べなさい。
- (2) 空所（ A ）に入るべき文を、以下の選択肢から選んで記号で答えなさい。
a. The eyes, however, have more than a visual function.
b. Our eyes, however, are quite different in this respect.
c. Imagine what would happen if their eyes were *not* facing forward.
d. Let's turn to the question of lighting in Hollywood movies.
- (3) 瞳のサイズが、人間同士のコミュニケーションにおいて持つ効果について、筆者が言及している例を2つ挙げながら、160～200字程度の日本語で述べなさい。
- (4) 空所（ B ）に入るべき語を、以下の選択肢から選んで記号で答えなさい。
a. lighter b. darker c. larger d. smaller
- (5) 歓喜している犬と、恐怖や怒りに駆られている犬とを、その目から見分ける方法について、筆者の説明を60～80字程度の日本語でまとめなさい。
- (6) 人の目に「白目」があることの利点について、筆者の説明を40～60字程度の日本語でまとめなさい。

出典： Stanley Coren, *Eye Talk, How to Speak Dog*, 2000, pp.105-108
(途中一部省略したところがある)