大阪医科大学

平 成 28 年 度 入 学 試 験 問 題 (後期)

英　　語

注　　意

1. 合図があるまで表紙をあけないこと。
2. 受験票は机上に出しておくこと。

大阪医科大学

平成28年度医学部一般入試の問題訂正箇所について

標記のことにつき、以下のとおり訂正箇所がありますのでお知らせします。

記

前期・理科

●訂正箇所：物理　大問Ⅱ　（1）　問題文

【誤】L_1 と L_2 の差は $\frac{2d}{L}$ …

↓

【正】L_1 と L_2 の差は $\frac{2dx}{L}$ …

後期・理科

●訂正箇所：化学　大問Ⅱ　問5　問題文の最後に以下の文言を追加

「なお、x の値は問5の解答欄の右上隅に書け。」

後期・英語

●訂正箇所：大問Ⅱ　（2）　設問文中の綴りを以下の通り訂正

【誤】De Wall

↓

【正】De Waal

以　上

英　語（後　期）　（その1）

Ⅰ　以下の英文を読み，下線部を日本語に訳せ。

A hundred years ago, the British mathematician and philosopher A.N. Whitehead wrote, "Civilization advances by extending the number of important operations which we can perform without thinking about them." It's hard to imagine a more confident expression of faith in automation. Implicit in Whitehead's words is a belief in a hierarchy of human activities: (1) Every time we off-load a job to a tool or a machine, we free ourselves to climb to a higher pursuit, one requiring greater skill, deeper intelligence, or a broader perspective. We may lose something with each upward step, but what we gain is, in the long run, far greater.

History provides plenty of evidence to support Whitehead. We humans have been handing off routine tasks, both physical and mental, to tools since the invention of the lever, the wheel, and the counting beads. But Whitehead's observation should not be mistaken for a universal truth. He was writing when automation tended to be limited to distinct, well-defined, and repetitive tasks. Automation is different now. Computers can be programmed to perform complex activities in which a succession of tightly coordinated tasks is carried out through an evaluation of many variables. Many software programs take on intellectual work—observing and sensing, analyzing and judging, even making decisions—that until recently was considered the preserve of humans. That may leave the person operating the computer to play the role of a high-tech clerk—entering data, monitoring outputs, and watching for failures. Rather than opening new frontiers of thought and action, software ends up narrowing our focus. We trade subtle, specialized talents for more routine, less distinctive ones.

Most of us want to believe that automation frees us to spend our time on higher pursuits but doesn't otherwise alter the way we behave or think. That view is a fallacy—an expression of what scholars of automation call the "substitution myth." (2) A labor-saving device doesn't just provide a substitute for some isolated component of a job or other activity. It alters the character of the entire task, including the roles, attitudes, and skills of the people taking part.

Psychologists have found that when we work with computers, we often fall victim to two cognitive ailments—complacency* and bias—that can undercut our performance and lead to mistakes. Automation complacency occurs when a computer lulls us into a false sense of security. (3) Confident that the machine will work flawlessly and handle any problem that comes up, we allow our attention to drift. We become disengaged from our work, and our awareness of what's going on around us fades. Automation bias occurs when we place too much faith in the accuracy of the information coming through our monitors. Our trust in the software becomes so strong that we ignore or discount other information sources, including our own eyes and ears. When a computer provides incorrect or insufficient data, we remain oblivious to the error.

The way computers can weaken awareness and attentiveness points to a deeper problem. Automation turns us from actors into observers. That shift may make our lives easier, but it can also inhibit the development of expertise. Since the late 1970s, psychologists have been documenting a phenomenon called the "generation effect**." It was first observed in studies of vocabulary, which revealed that people remember words much better when they actively call them to mind—when they generate them—than when they simply read them. The effect, it has since become clear, influences learning in many different circumstances. When you engage actively in a task, you set off intricate mental processes that allow you to retain more knowledge. You learn more and remember more. When you repeat the same task over a long period, your brain constructs specialized neural circuits dedicated to the activity. (4) It assembles a rich store of information and organizes that knowledge in a way that allows you to get access to it on the spot. What looks like instinct is hard-won skill, skill that requires exactly the kind of struggle that modern software seeks to alleviate.

(出典：*The Atlantic*, November 2013.　一部変更あり)

*complacency: a feeling of uncritical satisfaction

**generation: the production or creation of something

Ⅱ　以下の英文を読み，下の問いに答えよ。

"Make sure you play fairly," parents often say to their kids. In fact, children do not need encouragement to be fair. It is a unique feature of human social life that emerges in childhood. When given the opportunity to share sweets equally, young children tend to behave selfishly, but by about eight years of age most prefer to distribute resources to avoid inequalities, at least among members of their own social group.

Biologists are surprised by this tendency to behave fairly. The theory of evolution by natural selection predicts that individuals behave in ways to maximise their inclusive fitness*. So behaviours are only selected, and hence evolve, if they ensure the survival and reproduction of the actor, or of the kin who contain copies of the actor's genes. (1) However, the behaviour displayed by children seems to be at a disadvantage to themselves, especially when those who benefit from their selfless behaviour are not the children's close relatives.

Humans are proactively prosocial. We are often motivated to help others without those others signalling their need, such as begging, or displaying signs of need, such as crying. As cultural practices are not responsible for children developing their initial prosocial tendencies, it is thought that a sense of fairness must have been under strong positive selection during human evolution.

In a new review published in the journal *Science*, Sarah Brosnan of Georgia State University, and Frans de Waal of Emory University, explore this topic by trying to explain how our response to fairness and unfairness evolved. Species of primates, dogs, birds and fish have been studied. The overall results indicate that responses to disadvantageous inequity—say, protesting when another receives more banana pieces than you for pulling the same rope—are strongest in species that co-operate with others outside of mating and kinship bonds. This includes capuchin monkeys, chimpanzees and the ancestors of dogs. In other words, animals, including humans, that co-operate with non-kin have evolved sensitivity to detrimental unfairness so that they can avoid being taken advantage of.

However, what is less common in the animal kingdom is sensitivity to advantageous inequity, or protest when you receive more reward than another for the same task. (2) Such inequity aversion, at a cost to oneself, has only been recorded in humans and chimpanzees.

Brosnan and De Waal propose that the motivation to seek equal rewards, despite disadvantaging oneself, is to prevent dissatisfaction of the co-operative partner and avoid any negative outcomes that may follow. The main negative outcomes are the likelihood of conflict and loss of future advantageous co-operation with the partner. Also, one's reputation is tainted, reducing the chances of forming future beneficial partnerships. When we humans "play fair," we are doing so, according to Brosnan and De Waal, not due to a motivation for "equality for its own sake but for the sake of continued cooperation."

Humans have enlarged brains, which enhance our ability to understand the benefits of self-control in dividing resources. We also have language, which allows for enhanced reputation building. Because responsiveness to advantageous inequity is only seen in humans and chimpanzees, Brosnan and De Waal hypothesise that (3) its evolution, since the split from other apes, was the starting point for the eventual development of the advanced sense of fairness displayed by humans.

（出典：*The Guardian*, September 19, 2014.　一部変更あり）

*inclusive fitness: the ability of an individual organism to pass on its genes to the next generation, taking into account the shared genes passed on by the organism's close relatives.

(1)　下線部(1)を日本語に訳せ。

(2)　下線部(2)のような現象が生じる理由について，Brosnan と De Wall はどのような説明を与えているか。本文に則して 50 字以内（句読点を含む）で答えよ。

(3)　下線部(3)を "its" の内容を明らかにして日本語に訳せ。

Ⅲ　下線部を英訳せよ。

(1) フランス人は，一人あたり年に 20 キロから 30 キロの食品を捨てており，そのコストは年間 200 億ユーロと推定される。そこで，その半減を目指して，フランス議会は大手スーパーマーケットの食品廃棄を禁止する法案を可決した。(2) その新しい法の下では，スーパー側は食品廃棄を防ぐ対策を取らなければならなくなった。(3) 一例を挙げれば，スーパーは，売れ残ったがまだ食べられる食品については，慈善団体に寄付することが義務付けられている。