

時間 80分

解答→別冊 p.48

1 下の英文を読み、問に答えなさい。なお、本文中の\*のついた語(句)は注として本文の後にまとめてあります。

When we look in the mirror, we see some of the "instruments" necessary for choice. Our eyes, nose, ears, and mouth gather information from our environment, while our arms and legs enable us to act on it. We depend on these capabilities to effectively negotiate between hunger and satiation, safety and vulnerability, even between life and death. Yet our ability to choose involves more than simply reacting to sensory information. Your knee may twitch\* if hit in the right place by a doctor's rubber mallet,\* but no one would consider this reflex to be a choice. To be able to truly choose, we must evaluate all available options and select the best one, making the mind as vital to choice as the body.

The development of the prefrontal cortex\* is a perfect example of natural selection in action. While humans and animals both possess a prefrontal cortex, the percentage of the brain it occupies in humans is larger than in any other species, granting us an unparalleled ability to choose "rationally," superseding all other competing instincts. This facility improves with age, as our prefrontal cortex continues to develop well past adolescence. While [(1) (2), and (3) (4), (5) (6)] into our mid-20s. This is why young children have more difficulty understanding abstract concepts than adults, and both children and teenagers are especially prone to acting on impulse.

The ability to choose well is arguably the most powerful tool for controlling our environment. After all, it is humans who have dominated the planet, despite a conspicuous absence of sharp claws, thick hides, wings, or other obvious defenses. We are born with the tools to exercise choice, but just as significantly, we're born with the desire to do so. Neurons in the striatum,\* for example, respond more to rewards that people or animals actively choose than to identical rewards that are passively received. As the song goes, "Fish gotta\* swim, birds gotta fly," and we all gotta choose.

This desire to choose is so innate that we act on it even before we can express it. In a study of infants as young as four months, researchers attached strings to the infants' hands and let them learn that by tugging the string, they could cause pleasant music to play. When the researchers later broke the association with the string, making the music play at random intervals instead, the children became (7), even though the experiment was designed so that they heard the same amount of music as when they had activated the music themselves. These children didn't only want to hear music; they craved\* the power to choose it.

(8), while the power of choice lies in its ability to unearth\* the best option possible out of all those presented, sometimes the desire to choose is so strong that it can interfere with the pursuit of these very benefits. Even in situations where there is no advantage (9) having more choice, meaning that it actually raises the cost in time and effort, choice is still instinctively preferred. In one experiment, rats in a maze were given the option of taking a direct path or one that branched into several other paths. The direct and the branched paths eventually led to the same amount of food, so one held no advantage (10) the other. Nevertheless, over multiple trials, nearly every rat preferred to take the branching path. Similarly, pigeons and monkeys that learned to press buttons to dispense food preferred to have a choice of multiple buttons to press, even though the choice of two buttons opposed to one didn't result in a greater food reward. And though humans can consciously override this preference, [(12) (13) (14) (15) (16) (17)]. In another experiment, people given a casino chip preferred to spend it at a table with two identical roulette-style wheels rather than at a table with a single wheel, even though they could bet on only one of the wheels, and all three wheels were identical.

The desire to choose is thus a natural drive, and though it most likely developed because it is a crucial aid to our survival, it often operates independently of any concrete benefits. In such cases, the power of choice is so great that it becomes not merely a means (18) but something intrinsically valuable and necessary. So what happens when we enjoy the benefits that choice is meant to confer but our need for choice itself is not met?

(注) twitch : びくっと動く mallet : こづち prefrontal cortex : 前頭前皮質 striatum : 線条体(脳の部位) gotta : (have) got to crave : 欲しがる unearth : 明るみに出す

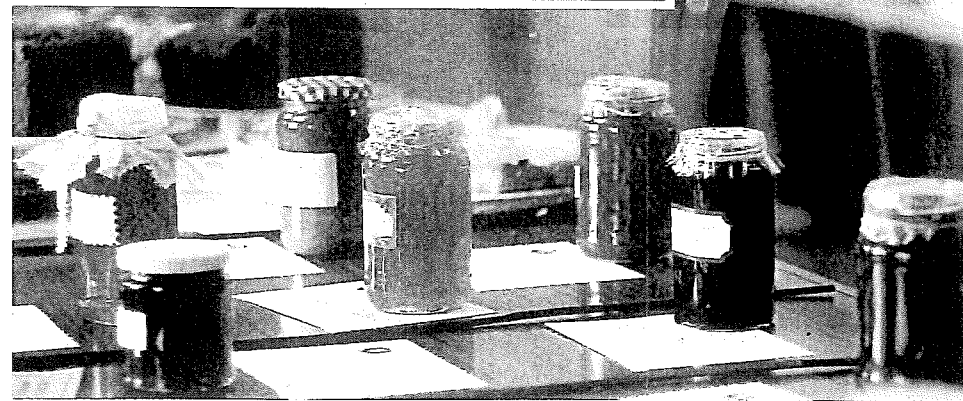
問1 下線部 Yet our ability to choose involves more than simply reacting to sensory information. を30~40字の日本語に訳しなさい。

問2 [(1) (2), and (3) (4), (5) (6)]の(1)~(6)に入る最も適切なものを下の選択肢から選びなさい。

- 1. by adolescence
2. factual reasoning abilities
3. largely developed by childhood

- 4. motor abilities are
5. that continues
6. the prefrontal cortex undergoes a process of growth and consolidation
問3 (7)に入る最も適切なものを下の選択肢から選びなさい。
1. happy and satisfied 2. indifferent and persistent
3. interested and enjoyed 4. sad and angry
問4 (8)に入る最も適切なものを下の選択肢から選びなさい。
1. Abruptly 2. Accordingly 3. Incidentally 4. Ironically
問5 (9)~(11)に入る最も適切なものを、それぞれ下の選択肢から選びなさい。
1. as 2. for 3. from 4. over 5. to 6. with
問6 [(12) (13) (14) (15) (16) (17)]の(12)~(17)に入る最も適切なものを下の選択肢から選びなさい。
1. doesn't 2. mean 3. necessarily
4. this 5. we 6. will
問7 (18)に入る最も適切なものを下の選択肢から選びなさい。
1. to an end 2. to be consumed 3. to be made 4. to the contrary

UNICORN English Communication 2



The Power of Choosing by Sheena Iyengar

LESSON 7

The Power of Choosing

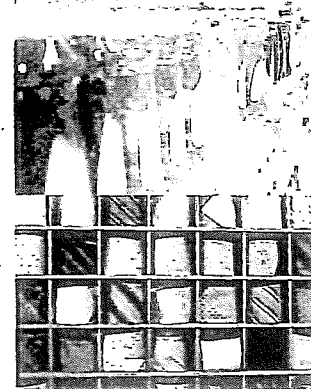
2

READING POINT

同じ実験が例に取り上げられています

Most of us will never experience such a serious situation, but we are nonetheless faced daily with our own imperatives to choose. We measure our lives using various markers: years, main events, successes. We can measure them by the choices we make, the total amount of time we have spent, the places we have visited, the people we have met. Choice has brought us to wherever and whoever we want to be today. When we view life in this light, we can say that choice is a force more powerful than anything else in determining how we live. It is perhaps because choice is directly linked to an innate desire in every one of us.

Q-Q Why did the infants become sad and angry?



became sad and angry, even though the experiment was designed so that they heard the same amount of music as when they had played the music themselves. These infants didn't only want to hear music; they longed for the power to choose it.

198 words

3

More research at a nursing home also demonstrates the importance of choice. The researchers divided the residents into two groups. One of the staff at that home then told the first group that they were allowed to do some things, but that the responsibility for their well-being lay in the hands of the staff. For instance, each of them was given a plant, but the nurses would take care of their plants for them. In contrast, for the second group, he let the residents choose their plants and told them to take care of them. He made it clear that it was their responsibility to make their new home

READING POINT

老人ホームの実際の結果を自分の日常の体験に置き換えて考えてみましょう。(Part.3)

Q-Q In group one, who was going to take care of the plants? How about for group two?

1 次の Water's Worldwide Travels というタイトルの英文を読み、設問1~10に答えよ。  
Water runs downhill from mountaintops to streams to rivers to oceans. But downhill isn't the only way that water moves. A new study measures how water travels from country to country for human consumption. This flow isn't the type we usually think about. These scientists looked at the water used to grow and make the products that get shipped from nation to nation as imports or exports. They call this a flow of "virtual water."

We typically think about water as the liquid that flows from a faucet. However, nearly all — 92 percent — of the water used by people goes into growing crops, according to water researcher Arjen Hoekstra at the University of Twente in the Netherlands. He and his team recently studied the hidden travels of virtual water used in products made from things like crops and meats. These products are shipped around the world.

For example, consider a sugary soft drink. Hoekstra and his team estimated that to produce one half-liter of the beverage requires between 170 and 310 liters of water. Only a tiny amount of (1) that — about 1 percent — is the water actually used in the soda. The vast majority of the water — about 95 percent — is used to grow and process the ingredients. Another 4 percent goes into the packaging and labeling, say the scientists. (The exact amount of water required depends on the sweetener being used.) In Hoekstra's calculation, when one country produces a half-liter of soda and sells it abroad, it exports as much virtual water as would fill a large refrigerator.

According to Hoekstra's new report, dry countries like Israel and Kuwait, both in the Middle East, get the majority of their virtual water from other countries, through imported products. More surprisingly, some wetter countries, like the Netherlands and the United Kingdom, also get the majority of their virtual water from other places. That means that most of the water used to grow or produce the products and food consumed in those countries came from other countries.

In the United States, most of the virtual water used comes from American sources; only about 20 percent of the virtual water comes from outside national boundaries. In China, even less of the water associated with its products — about 10 percent — came from foreign countries.

Tracing the water trade, Hoekstra and his team turned up other surprising relationships. For instance, often an (2) arid region sends virtual water to a wetter region. Dry areas in northern China, for example, send virtual water to the southern part of that country, which is wetter. "There are

exporting regions that do have a lot of (3) water stress," he said.

- 本文で説明されている virtual water の定義として最もふさわしいものを a~d から一つ選べ。
  - water that flows from higher places to lower places
  - water needed to make products and grow the ingredients in them
  - water packaged in bottles and transported between countries by ship
  - water that is included in various types of soft drinks
- 第二段落の内容として最もふさわしいものを a~d から一つ選べ。
  - 穀物や肉、またそれらを原料として使った輸出品に含まれる水分量は正確に計測できる。
  - 私たちが水道水として使用している水は、人間が様々な形で使用する水の大部分を占める。
  - 私たちが作物を育てるのに必要な水の量は、水道から供給される水の量よりはるかに多い。
  - 年間どのぐらいの量の穀物や肉が輸出入されているかは、一般の人々によく理解されている。
- 下線部(1)の示すものを a~d から一つ選べ。
  - 0.5 liter
  - 170~310 liters
  - 1 percent
  - 5 percent
- 炭酸飲料を作る時に、最も多く必要とされる種類の水を a~d から一つ選べ。
  - the water needed to produce the drink's ingredients
  - the water needed to produce the drink's container
  - the water actually used in the drink
  - the water needed to store the drink in the refrigerator
- 第四段落の内容と合致しないものを a~d から一つ選べ。
  - There are countries that export virtual water to drier countries in the Middle East.
  - Two relatively wet European countries are importers of virtual water.
  - The research report written by Hoekstra and his team included some unexpected results.
  - Most European countries import products and food from other regions.

キーワードは  
"Virtual Water"

- アメリカ合衆国の水事情に関する記述として最もふさわしいものを a~d から一つ選べ。
  - Part of the virtual water used in the country is obtained from nearby countries.
  - About one fifth of the virtual water used in the country is imported from other countries.
  - One region of the country supplies a large percentage of its virtual water.
  - About eighty percent of the water produced in the country is eventually exported as virtual water.
- 国外から輸入する virtual water の割合が最も低い国を a~d から一つ選べ。
  - Kuwait
  - the Netherlands
  - China
  - the United States
- 下線部(2)の arid の意味として最もふさわしいものを a~d から一つ選べ。
  - rainy
  - central
  - southern
  - dry
- Hoekstra のチームの研究内容または成果に関する記述として、最もふさわしいものを a~d から一つ選べ。
  - Their findings about the relationship between climate and virtual water flow were not new.
  - They discovered that regions that have more water do not always supply it to those that have less.
  - They found that many countries in Europe import virtual water from other regions of the world.
  - The primary focus of the research team was to study the flow of virtual water in China.
- 下線部(3)の water stress の意味として最もふさわしいものを a~d から一つ選べ。
  - 水を間接的に他の地域に供給しているが、実は水が不足していること
  - 地域で取れる水の量が多すぎて、水を直接的に他の地域に供給していること
  - 水の直接的な輸出に力を入れすぎて、他品目の輸出が減ること
  - 近場で水が手に入りにくいいため、水の間接的な輸入に頼ること

UNICORN English Communication 2

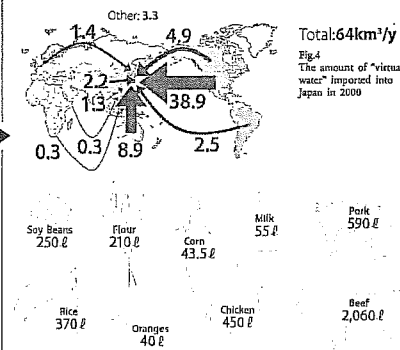


LESSON 8

Global Water Issues  
by Taikan Oki

LESSON 8

Global Water Issues



is limited to a few liters per person per day and can be met through international trade or by desalination, other demands for water for households, industry and agriculture require much more water, and the cost for these sectors must be reasonable. Transporting water by tanker or other high energy-consuming means is not practical.  
On the other hand, water demand for growing food and for industrial production in dry regions can be

offset by importing goods. Such trade is called "virtual water trade (Fig.4)." The weight of traded goods is normally 1/100 to 1/1000 of the weight of the water required to produce those goods. For instance, a lot of water is used to raise crops for livestock. To get 100g of beef, nearly 2m<sup>3</sup> of water is needed. When we eat 100g of beef, we consume as much as 2m<sup>3</sup> of virtual water (Fig.5). In short, transporting goods is much easier than transporting the water itself. Total international "virtual water trade" is estimated to be about 2,320 km<sup>3</sup>/year, and it partly makes up for water shortages.

4  
The global population will certainly grow, at least for several decades, and water demand will increase as a result. In the agricultural sector, which is estimated to use two-thirds of world water withdrawals, in the period from 1961 to 2004, crop yield per area increased by a factor of 2.3, more than the rate of population growth (2.0). This growth was to a large extent due to a doubling in irrigation. Domestic per capita water use

Q-8 How can water demand for growing food and for industrial production in dry regions be offset?

READING POINT  
淡水増産を促すためにはどうすればいいか。世界の増産を要と捉えよう。(Part 4)

Q-9 Why did crop yield per area increase in the period from 1961 to 2004?