

英 語

- 1 (A) 以下の英文は、高齢者にやさしい (age-friendly) 町づくりを促進するための世界的な取り組みについて論じたものである。この文章の内容を 70~80 字の日本語で要約せよ。句読点も字数に含める。

The age-friendly community movement has emerged as a powerful response to the rapidly growing aging population. Although definitions of “age-friendly community” vary, reflecting multiple approaches and methods, many models highlight the importance of strengthening social ties and promote a vision that takes into account all ages. For example, Kofi Annan, who served as the seventh Secretary-General of the United Nations, declared in the opening speech at the UN International Conference on Aging in 1999, “A Society for All Ages embraces every generation. It is not fragmented, with youths, adults, and older persons going their separate ways. Rather, it is age-inclusive, with different generations recognizing and acting upon their common interests.”

The World Health Organization and other international organizations further articulate this premise by defining aging as a lifelong process: “We are all aging at any moment in our life and we should all have the opportunity to do so in a healthy and active way. To safeguard the highest possible quality of life in older age, WHO endorses the approach of investing in factors which influence health throughout the life course.”

In practice, however, the age-friendly community movement has focused primarily upon the needs and interests of older adults and their caregivers and service providers. In doing so, it has failed to gather enough data from youth and families about what produces good living conditions in a city or

about opportunities for and barriers against working together with older adults.

What accounts for this gap between vision and practice? One answer may lie in the common assumption of the age-friendly community movement that what is good for older adults is good for everyone. In other words, if the age-friendly movement succeeds in making communities suitable for older adults, those communities will then be suitable for all generations. While there are many shared interests among different generations, recent studies in the United States and Europe indicate that young adults and older adults differ in their voting patterns and attitudes more than at any time since the 1970s. These studies suggest that in order to fully understand what constitutes a city that is friendly to people at different stages of the aging process, it is critical to gather data from multiple generations about what makes a city good for both growing up and growing older.

(B) 以下の英文を読み, (ア), (イ) の問いに答えよ。

Culex molestus is a subspecies of mosquito known as the London Underground mosquito. It gained this name because it was first reported during the German bombing raids of the city in 1940, when the subway tunnels were used as overnight bomb shelters. The *Culex* is a very common type of mosquito, and it has many forms. While they look the same as *Culex pipiens*, their above-ground relatives, the *molestus* mosquitoes behave in a very different way. Up on London's streets, the mosquitoes feed on bird, not human, blood. They need this blood meal before they can lay their eggs, and they sleep during the winter. Down in the subway, the mosquitoes suck passengers' blood and they lay eggs before feeding; they are also active the whole year round.

Despite its name, the Underground mosquito is not unique to London, as recent studies have revealed. It lives in basements and subways all over the world, and it has adapted its ways to its human-built environment. (ア) and planes, its genes spread from city to city, but at the same time it also cross-breeds with local above-ground mosquitoes, absorbing genes from that source as well. — probably only since humans began constructing underground buildings, did *Culex molestus* evolve.

The evolution of the London Underground mosquito fascinates me not least because it seems such an interesting addition to evolution's standard portfolio. We all know about evolution perfecting the feathers of birds of paradise in distant jungles or the shape of rare flowers on high mountaintops. But apparently, the process is so ordinary that it is happening literally below our feet, among the dirty power cables of the city's subway system. Such a nice, unique, close-to-home example! The sort of thing you'd expect to find in a biology textbook.

But what if it is not an exception anymore? What if the Underground mosquito is representative of all plants and animals that come into contact

with humans and the human-crafted environment? What if our grip on the Earth's ecosystems has become so firm that life on Earth is in the process of evolving ways to adapt to a thoroughly urban planet?

In 2007, for the first time in history, there were more people living in urban than in rural areas. (2) . By the mid-twenty-first century, two-thirds of the world's estimated 9.3 billion will be in cities. Mind you, that's for the entire world. In western Europe, more people have lived in cities than in the countryside since 1870, and in the US that turning point was reached in 1915. Areas like Europe and North America have been firmly on the way to becoming urban continents for more than a century. A recent study in the US showed that each year, the average distance between a given point on the map and the nearest forest increases by about 1.5 per cent.

In ecological terms, the world has never seen the situation that we find ourselves in today: a single large animal species completely occupying the planet and turning it to its advantage. At the moment, our species appropriates fully one-quarter of the food that all of the world's plants produce and much of all the world's fresh water. Again, this is something that has never happened before. No other species that evolution has produced has ever been able to play such a central ecological role on such a global scale.

(3) . By 2030, nearly 10 per cent of the land on the planet will be densely populated, and much of the rest covered by farms, fields, and plantations which humans have shaped. Altogether a set of entirely new habitats, the likes of which nature has not seen before. And yet, when we talk about ecology and evolution, about ecosystems and nature, we are stubbornly ignoring the human factor, focusing our attention instead on that diminishing fraction of habitats where human influence is still very small.

Such an attitude can no longer be maintained. It's time to acknowledge the fact that human actions are the world's single most influential ecological

force. Whether we like it or not, we have become fully integrated with everything that happens on this planet. . Out in the real world, however, the threads of human activity are tightly woven into nature's fabric. We build cities full of novel structures made of glass and steel. We pump greenhouse gases into the air that alter the climate; we release non-native plants and animals, harvest other species, and use a variety of natural resources for our own needs. Every non-human life form on Earth will come across humans, either directly or indirectly. And, mostly, such encounters are not without consequence for the organism in question. They may threaten its survival and way of life. But they may also create new opportunities, as they did for the ancestors of *Culex molestus*.

So what does nature do when it meets challenges and opportunities? It evolves. If at all possible, it changes and adapts. The greater the pressure, the faster and more widespread this process becomes. As subway passengers know all too well, in cities there is great opportunity, but also great competition. Every second matters if you want to survive, and nature is doing just that. .

注

mosquito 蚊

ecosystem 生態系

(ア) 下に与えられた語を正しい順に並べ替え、空所(ア)を埋めるのに最も適切な表現を完成させ、記述解答用紙の1(B)に記入せよ。なお文頭の語は大文字で始めよ。

cars get in mosquitoes thanks that to trapped

(イ) 空所 (1) ~ (5) に入れるのに最も適切な文を以下の a) ~ g) より一つずつ選び、マークシートの (1) ~ (5) にその記号をマークせよ。ただし、同じ記号を複数回用いてはならない。

- a) And it has also become clear that all this has happened very recently
- b) Otherwise, it may not be possible to reverse some of the changes we are imposing on Earth
- c) Perhaps in our imaginations we can still keep nature divorced from the human environment
- d) Since then, that statistic has been rising rapidly
- e) So, our world is becoming thoroughly human-dominated
- f) While we have all been focusing on the vanishing quantity of untouched nature, urban ecosystems have been rapidly evolving behind our backs
- g) Yet the urban evolutionary rules are beginning to differ more and more from the ones we find in the natural world

- 2 (A) 私たちは言葉を操っているのか。それとも、言葉に操られているのか。あなたの意見を 60～80 語の英語で述べよ。

(B) 以下の下線部を英訳せよ。

生きてゆくためにはまず若干の自信を持たなくてはならぬ。しかし自信ばかりで押し切っては、やがていつかは他人を害する立場に立つ。自分たちは、いつも自分たちの信念がある程度までまゆつばものだということを悟り、かくて初めて寛容の態度を養うことができる。自信と疑問、独断主義と懐疑主義との二刀流によって、われわれは世界と渡り合うことにしたい。(鶴見俊輔『アメリカ哲学』)

3 放送を聞いて問題 (A), (B), (C) に答えよ。(A) と (B) は内容的に関連している。(C) は独立した問題である。(A), (B), (C) のいずれも 2 回ずつ放送される。

- ・聞き取り問題は試験開始後 45 分経過した頃から約 30 分間放送される。
- ・放送を聞きながらメモを取ってもよい。
- ・放送が終わったあとも、この問題の解答を続けてかまわない。

(A) これから放送するのは、心理学者 Gopnik 博士の著書 *The Gardener and the Carpenter* (『庭師と大工』) に関するインタビューである。これを聞き、(6) ~ (10) の問いに対して、それぞれ最も適切な答えを一つ選び、マークシートの (6) ~ (10) にその記号をマークせよ。

(6) Which of the following statements does NOT match the carpenter concept of parenting?

- a) It assumes parenting is like shaping basic materials into a particular form.
- b) It includes a clear idea of the final goal of parenting.
- c) It involves following a specific plan for raising children well.
- d) It is the dominant model of parenting in the developed world today.
- e) It requires cooperation between parents and other active agents.

(7) Which of the following changes in human society has been more important for producing the dominant model of parenting in the developed world?

- a) The development of an industrial economy.
- b) The emergence of higher education.
- c) The reduced experience of caring for children before having one's own.
- d) The rise of large, extended families.
- e) The shift from hunting and gathering to settled agricultural society.

- (8) Which of the following statements is NOT mentioned in the interview?
- a) In modern society, people often start a family without first having the experience of caring for children.
 - b) Parenting began to change in the 20th century.
 - c) Parenting has been viewed as similar to going to school or working.
 - d) Parenting will go more smoothly if you first have a successful career.
 - e) Some parents look for the right manual in order to bring up their children well.
- (9) Which of the following does Gopnik mention as a reason why humans have an especially long childhood?
- a) It allows them to acquire language.
 - b) It allows them to become more flexible and adaptable.
 - c) It allows them to develop a larger brain.
 - d) It allows them to experience life more fully.
 - e) It allows them to protect their surrounding environment.
- (10) Based on this conversation, which of the following statements best describes the views of Gopnik and the host, Vedantam?
- a) Gopnik and Vedantam both prefer the carpenter model.
 - b) Gopnik and Vedantam both prefer the gardening model.
 - c) Gopnik and Vedantam find much to appreciate in both models.
 - d) Gopnik prefers the carpenter model, but Vedantam prefers the gardening model.
 - e) Gopnik prefers the gardening model, but Vedantam prefers the carpenter model.

(B) これから放送するのは、司会者 (Vedantam) と Gopnik 博士, Webb 博士の 3 人による, (A) と内容的に関連した会話である。これを聞き, (11) ~ (15) の問いに対して, それぞれ最も適切な答えを一つ選び, マークシートの (11) ~ (15) に その記号をマークせよ。

- (11) According to Gopnik, what is a likely outcome of the carpenter model of parenting?
- a) Children will achieve more by taking chances.
 - b) Children will be better able to deal with uncertainty.
 - c) Children will be more likely to be cautious.
 - d) Children will be well-balanced in their later life.
 - e) Children will benefit from greater freedom.
- (12) According to Vedantam, what does Gopnik argue?
- a) Children learn valuable lessons by taking risks.
 - b) Children need to develop specialized skills from an early age.
 - c) Parents need to have specific goals for their children.
 - d) The carpenter model is designed to increase the child's sense of freedom.
 - e) The current culture of parenting needs only minor adjustments to be successful.
- (13) What objection does Webb raise to Gopnik's argument?
- a) Giving children a lot of freedom can limit their future opportunities.
 - b) If you are going to be free of anxiety, you need a structured life.
 - c) If you are going to succeed, you need to try a lot of things before choosing one.
 - d) In order to be an Olympic athlete, you must start taking lessons before the age of fourteen.
 - e) Success in life is based on a child's natural ability.

- (14) What does Gopnik think about the problem Webb describes?
- a) Children should be encouraged to trust their parents.
 - b) Children should not be expected to work that hard in order to succeed.
 - c) Parents in a competitive culture should make great demands of their children.
 - d) Parents should give children every advantage possible to help them succeed.
 - e) We should feel sympathy for parents in this situation.
- (15) What conclusion does Webb finally draw from this discussion?
- a) Life is like an unfair competition.
 - b) Most models of parenting do not prepare children well enough for life.
 - c) Not enough parents understand how to help their children succeed in life.
 - d) Parenting can be a very unrewarding activity.
 - e) The real problem lies in society.

(C) これから放送する講義を聞き、(16)～(20)の問いに対して、それぞれ最も適切な答えを一つ選び、マークシートの(16)～(20)にその記号をマークせよ。

- (16) Which scientific advance made the recent progress in speed breeding possible?
- a) Better space flight technology.
 - b) Developments in LED technology.
 - c) Improvements in climate control technology.
 - d) More efficient methods of harvesting.
 - e) The invention of the carbon arc lamp.
- (17) When did scientists in China achieve their breakthrough in making one of the world's vital food crops resistant to a disease?
- a) 2002
 - b) 2004
 - c) 2008
 - d) 2012
 - e) 2014
- (18) Which of the crops listed below is NOT used to illustrate how gene editing has protected plants from disease?
- a) Bananas
 - b) Barley
 - c) Rice
 - d) Soybeans
 - e) Wheat

- (19) Which of the following is NOT mentioned as a location where research projects are currently carried out?
- a) Australia
 - b) China
 - c) Europe
 - d) India
 - e) South Korea
- (20) According to Hickey, meeting the future challenges of food security will require
- a) continuing advances in speed breeding.
 - b) efforts to control population growth.
 - c) new breakthroughs in gene editing.
 - d) the application of all available technologies.
 - e) the development of new tools.

- 4 (A) 以下の英文の段落 (21) ~ (25) にはそれぞれ誤りがある。修正が必要な下線部を各段落から一つずつ選び、マークシートの (21) ~ (25) にその記号をマークせよ。

(21) Among the various elements of (a) the natural world which in fantasy fiction become invested with mysterious powers, trees and forests particularly often (b) undergo changes which elevate them from the domain of the natural into that of the super-natural. Consequently, their appearance (c) in fantastic stories lively characters and magical woodlands strengthens the charming and exotic appeal of a story. Yet it is a misunderstanding to perceive the trees and forests of fantasy (d) as hardly anything else than amusing (e) but otherwise insignificant characters.

(22) Various myths from across the world (a) include sacred trees which serve as a link between humankind and the divine. In other words, the tree was often associated with a particular god or, together with a sacred stone, it formed a place of worship, which was called a “microcosm,” because (b) its structure reflected the nature of the cosmos. As the sacred “upside-down tree,” whose roots were in the sky and branches reached the earth, it (c) was functioned also as a representation of the universe. Moreover, the location of the tree was often perceived as the ultimate center of reality, and the tree itself became a link between heaven and earth. (d) Because of its cycle of shedding and regrowing leaves, many cultures regarded the tree as symbol of life, and numerous myths (e) insisted that human life was connected to or, in fact, originated from trees and other plants.

(23) While some writers of fantasy fiction use fantastic trees and forests only (a) as important elements of their world-building, numerous others have recognized (b) the potential locking in the image of myths and fairy tales. As a result, in modern fantasy, trees and forests also (c) become a vessel of the divine, a space of trial and testing, a catalyst of the hero’s physical and

psychological change, and an active agent in the resolution of conflict. Moreover, they are frequently (d) presented as the last trace of myth in the modern world, and their portrayal may be (e) a metaphor through which the author intends to convey an important message about humanity's relationship with the natural world.

(24) Today, many people treat our planet's ecosystems as commodities, and (a) acknowledge only their material and practical value. Of course, forests (b) have supplied people with resources for centuries, (c) yet now, more than ever, the environment is endangered by human progress, because (d) not only does our growing population require more and more space and resources, but also we are slowly “migrating” into the cyberspace (e) where we are easy to forget about our connection with the rest of the living world.

(25) Fortunately, fantasy fiction — (a) the heir to the traditions of myths and fairy tales — may still (b) remind us the spiritual value of nature. In fantasy fiction, trees and forests play vital roles and are presented as entities fundamental to the well-being of the imaginary world and its inhabitants. Staying in harmony with the natural world is (c) shown as a deeply rewarding experience, because the natural world is filled with the divine essence. Writers of fantasy fiction, such as MacDonald, Tolkien, and Lewis, (d) perceived nature religiously in their own lives and used myth to (e) convey this religious sensibility towards nature to their readers.

注

microcosm 小宇宙

cosmos 宇宙

ecosystem 生態系

catalyst 触媒

MacDonald G.マクドナルド(1824-1905; 英国の作家)

Tolkien J.R.R.トールキン(1892-1973; 英国の作家)

Lewis C.S.ルイス(1898-1963; 英国の作家)

(B) 以下の英文を読み、下線部(ア)、(イ)、(ウ)を和訳せよ。下線部(イ)を訳す際には、“that same pool”が何を指しているかを明らかにせよ。

The social psychologist and writer Daniel Gilbert suggests that human beings are “works in progress that mistakenly think they’re finished.” And he claims, “the person you are right now doesn’t remain as it is. It is as temporary as all the people you’ve ever been. The one constant in our lives is change.” (ア) Time is a powerful force, he says, and one that perpetually revises our values, personalities, and preferences in everything from music and the places we would like to go to friendship.

Researchers at the University of Edinburgh, who conducted the longest-ever study of the stability of human character, have come to a similar conclusion, finding that those qualities that seemed to mark us as teenagers could be almost gone in our later lives. Characteristics might appear stable over short periods of time but change over decades. The researchers used data taken from a part of the 1947 Scottish Mental Survey, which tracked development in a pool of 70,805 children. They used a smaller sample of 1,208 fourteen-year-olds to study personality stability in the kids as they went from being adolescents to adults. The survey had identified six particular characteristics: self-confidence, determination, mood stability, sincerity, originality, and the desire to learn. (イ) In 2012, an attempt was made to track down that same pool of participants and, of those found, 174 agreed to take part in the continued research. They were asked to rate themselves on these same six characteristics and the degree to which they remained dominant factors in their behavior; family members, partners, and friends close to the participants were also asked to assess the continued presence of the earlier characteristics. The results determined that (ウ) while some of these characteristics remained steady over shorter periods of the participants’ lives, most of them, with the exception of mood stability, had changed markedly, sometimes vanishing entirely.

5 以下の英文を読み, (A) ~ (D) の問いに答えよ。

“Let’s make a bet,” my father said, on my fifteenth birthday. I remember very clearly being fifteen; or rather, I remember what fifteen feels like to a fifteen-year-old. The age is a diving board, a box half-opened.

We were sitting in stiff wooden chairs on the lawn, watching the evening settle over the neighborhood, all of that harmless fading light softening the world.

“I bet you’ll leave here at eighteen and you’ll never come back,” he said. “Not once.”

We lived two hours outside of Los Angeles, in a suburb attached to a string of other suburbs, where ^(A)the days rarely distinguished themselves unless you did it for them.

“You don’t even think I’ll come back and visit?” I said.

“No,” he said. “I don’t.” My father was a reasonable man. He did not generalize. He was not prone to big, dubious statements, and he rarely gambled. I felt hurt and excited by the suggestion.

“What about Mom?” I asked.

“What about her?”

I shrugged. It seemed she had little to do with his prediction.

“And James?” I asked.

“Not sure about James,” he said. “I can’t bet on that one.”

James was — and still is — my younger brother. I felt little responsibility for him. At ten, he was ア(26) but anxious and very much my parents’ problem. My mother adored him, though she thought ^(B)_____. Make no mistake: we were equally loved but not equally preferred. If parents don’t have favorites, they do have allies.

Inside, my mother was cooking dinner while James followed her around the kitchen, handing her bits of paper he’d folded into unusual shapes. Even then, he had a talent for geometry.

“Where will I go?” I asked my father. My grades were merely ア(27). I’d planned—vaguely, at fifteen—to transfer somewhere after a few years at the local junior college.

“It doesn’t matter where,” he said, waving away a fly circling his nose.

Next door, the quiet neighbor kid, Carl, walked his dog, also called Carl, back and forth across his lawn. The weather was pleasant.

“What happens if I do come back?” I asked.

“You’ll lose if you come back,” he said.

I hated to lose, and my father knew it.

“Will I see you again?” I asked. I felt イ in a way that felt new, at fifteen, as though the day had turned shadowy and distant, already a memory. I felt イ about my father and his partly bald head and his toothpaste breath, even as he sat next to me, running his palms over his hairy knees.

“Of course,” he said. “Your mother and I will visit.”

My mother appeared at the front door with my brother, his fingers holding the back pocket of her jeans. “Dinnertime,” she said, and I kissed my father’s cheek as though I were standing on a train platform. I spent all of dinner feeling that way too, staring at him from across the table, mouthing goodbye.

My eighteenth birthday arrived the summer after I’d graduated from high school. To celebrate, I saw the musical *Wicked* at a theater in Los Angeles with four of my friends. The seats were deep and velvety. My parents drove us, and my father gave us each a glass of champagne in the parking lot before we entered the theater. We used small plastic cups he must have bought especially for the occasion. I pictured him walking around the supermarket, looking at all the cups, deciding.

A week after my birthday, my father woke me up, quieter than usual. He seemed ア(28). I still had my graduation cap tacked up on the wall. My mother had taken the dress I’d worn that day to the dry cleaner, and it still lay on the floor in its cover.

“Are you ready to go?” he asked.

“Where are you taking me?” I wanted to know.

“To the train station,” he said slowly. “It’s time for you to go.”

My father had always liked the idea of traveling. Even just walking through an airport gave him a thrill — it made him ア(29), seeing all those people hurrying through the world on their way to somewhere else. He had a deep interest in history and the architecture of places he’d never seen in person. It was the great tragedy of his life that he could never manage to travel. As for my mother, it was the great tragedy of her life that her husband was ア(30) and didn’t take any pains to hide it. I can see that now, even if I didn’t see it then.

“Where’s Mom?” I asked. “And where’s James?”

“The supermarket,” my father said. James loved the supermarket — the order of things, all ア(31) in their rows. “Don’t cry,” Dad said then, smoothing my pillowcase, still warm with sleep. He had a pained look on his face. “Don’t cry,” he said again. I hadn’t noticed it had started. (C) My whole body felt emotional in those days, like I was an egg balanced on a spoon.

“You’ll be good,” he said. “You’ll do good.”

“But what about junior college?” I asked. “What about plans?” I’d already received a stack of shiny school pamphlets in the mail. True, I didn’t know what to do with them yet, but I had them just the same.

“No time,” my father said, and the urgency in his voice made me hurry.

(A) 下線部 (A) の内容を本文に即して日本語で説明せよ。

(B) 下に与えられた語を正しい順に並べ替え、下線部 (B) を埋めるのに最も適切な表現を完成させよ。

equal fooled into me she thinking we were

(C) 下線部 (C) の内容をこの場面に即して具体的に日本語で説明せよ。

(D) 以下の問いに解答し、その答えとなる記号をマークシートにマークせよ。

(ア) 空所(26)～(31)には単語が一つずつ入る。それぞれに文脈上最も適切な語を次のうちから一つずつ選び、マークシートの(26)～(31)にその記号をマークせよ。ただし、同じ記号を複数回用いてはならない。

- a) average b) cheerful c) frightened d) intelligent
e) neat f) solemn g) tolerant h) unhappy

(イ) 空所(イ)に入れるのに最も適切な単語を次のうちから一つ選び、マークシートの(32)にその記号をマークせよ。

- a) angry b) delighted c) excited
d) sentimental e) unfair

(ウ) 本文の内容と合致するものはどれか。一つ選び、マークシートの(33)にその記号をマークせよ。

- a) The author finally decided to go to the local junior college.
b) The author had planned to leave home since she was fifteen.
c) The author had to leave home because there was conflict between her parents.
d) The author's father drove her away because he hated her.
e) The author's father predicted that she would not come back home although he and her mother would visit her.

問題 A

SHANKAR VEDANTAM, HOST: This is *Hidden Brain*, and I'm your host, Shankar Vedantam. This week our guest is well-known psychologist Alison Gopnik. Her most recent book, *The Gardener and the Carpenter*, is about the different ways parents approach raising kids. Dr. Gopnik, welcome to the show.

ALISON GOPNIK: Glad to be here.

VEDANTAM: Your book is built around comparisons: parents behaving like gardeners, parents behaving like carpenters. Explain that for us.

GOPNIK: Well, if you look at the dominant culture of parenting in the developed world now, it's a lot like being a carpenter. The idea is that you're working with fixed materials that can be shaped or rearranged, and if you have the right skills and follow the right instructions, then you'll be able to shape your child into a particular kind of adult.

That approach is very different from what you get if you think of parenting as more like being a gardener. For one thing, a gardener never knows exactly what is going to happen because the gardener is working with partners—Mother Nature, the plants as active factors—not with fixed objects. So gardeners try to create a rich, supportive environment in which a lot of different things can happen.

Personally, I'm convinced that taking care of human beings is much more like being a gardener than like being a carpenter. It's much more about providing a nurturing space in which both predictable and unpredictable things can happen than about constructing a particular kind of desirable adult.

VEDANTAM: Hearing you describe it, the gardening model seems so natural, so, well, "organic." How did we turn into a society of carpenters?

GOPNIK: Good question. For most of human history, the whole village has been involved in caring for children—brothers, sisters, uncles, aunts, cousins, everybody. And that meant that, by the time we had our own children, we had had lots of experience caring for children.

During the 20th century, though, families got smaller and more mobile, couples had children at a later age, and, for the first time, many people starting families didn't have much experience caring for children but did have lots of experience going to school and working. So I think it was natural

for people to think, OK, this will be like going to school and working. If I can just find the right manual or the right formula, I'll do the job well and produce a good product.

VEDANTAM: You also point out that, compared to most other animals, humans have a very long childhood.

GOPNIK: That's right. We need a lot more time before we are ready to function on our own. So why are we different? One idea is that a long childhood gives you this protected period where you can figure out how to adapt to new conditions. And that's what makes it possible for humans to live in so many different environments.

VEDANTAM: It seems to me that the gardening model is a perfect match for those conditions, the lengthy human childhood.

GOPNIK: That's exactly right. Imagine you could do the carpentering thing, you know, plan it all out, here is how I want my child to turn out, here is how I'm going to make that happen. You would have lost the whole point of childhood, which is to cultivate new ideas, new ways of being in the world, new ways of understanding the environment.

VEDANTAM: Fascinating. We'll continue our discussion after a brief break.

問題 B

VEDANTAM: Welcome back to *Hidden Brain*. I'm your host, Shankar Vedantam, and we're discussing parenting with Dr. Alison Gopnik. We're also joined by Maurice Webb, head of a school for gifted children. Firstly, Dr. Gopnik, you've written that today's adolescents are in a very different situation from those in the past. Remind us of what you've observed.

GOPNIK: You know, in some ways, they're doing much better than at any other time in modern history. They're achieving more, but that's partly because they're less likely to take risks. But that goes with a lot of anxiety—high levels of anxiety and fear. And I think, you know, that is kind of what you would predict from the carpenter story.

VEDANTAM: How do you mean?

GOPNIK: Well, in the carpenter story, you're so concerned that the child come out "correctly" that you're not giving the child the freedom to take risks and explore and be autonomous. And it's not risk-taking unless there is some chance that it could really go wrong, and I think that's another aspect

of the current parenting culture that's problematic.

VEDANTAM: So, Dr. Gopnik, your argument is that by creating an environment where children can freely learn and explore, you raise children who perhaps are going to be better able to deal with what the world throws at them. But Dr. Webb, I wonder if things look differently from your perspective?

MAURICE WEBB: Well, I think our world rewards people who can do very specific things and do them very well. Like in the Olympics, for example. People who are winning gold medals in ice skating in the Olympics, you know, those are usually kids who started lessons when they were three. And even though you might say, you know, let the child figure out what he or she might want to do, if a child discovers that she really wants to be an ice skater when she's fourteen, it's probably too late at that point to really be very good at it. That's the problem.

VEDANTAM: Right, and so I'm wondering if there could be reasonable differences here in what people might be aiming for as parents?

WEBB: I suspect that there is. The question is, are we aiming for children who are well-adjusted, or for children who are successful? And I wish there wasn't a tension between those two things, but, unfortunately, I think there is.

GOPNIK: There's no question that most parents have a sense of being in a very competitive universe. I mean, parents see their teenagers staying up until 2 o'clock every night studying to get that little extra advantage that's going to get them into the best college. That's crazy. I'm genuinely sympathetic, but there is something wrong here.

WEBB: I agree, and I wish that success didn't require those extremes. But perhaps it isn't parenting that needs to change; instead, it's how society rewards and punishes success in school. A small advantage in a test shouldn't make the enormous difference to anyone's life that it currently does. Competition based on fairness and equality is valuable, but life shouldn't actually be like a contest, where there is either success or failure, and most people fail. But that's what we have to prepare children for and I think the real issue is there, not with the models of parenting themselves.

VEDANTAM: Unfortunately, we're out of time and will have to end our discussion on that note. Thank you both for talking with us today.

問題 C

Farmers and plant breeders are in a race against time. According to Lee Hickey, an Australian plant

scientist, “We face a grand challenge in terms of feeding the world. We’re going to have about 10 billion people on the planet by 2050,” he says, “so we’ll need 60 to 80 percent more food to feed everybody.”

Breeders develop new kinds of crops—more productive, disease-resistant—but it’s a slow process that can take a decade or more using traditional techniques. So, to quicken the pace, Dr. Hickey’s team in Australia has been working on “speed breeding,” which allows them to harvest seeds and start the next generation of crops sooner. Their technique was inspired by NASA research on how to grow food on space stations. They trick crops into flowering early by shining blue and red LED lights 22 hours a day and keeping temperatures between 17 and 22 degrees Celsius. They can grow up to six generations of wheat in a year, whereas traditional methods would yield only one or two.

Researchers first started growing plants under artificial light about 150 years ago. At that time, the light was produced by what are called carbon arc lamps. Since then, advances in LED technology have vastly improved the precision with which scientists can adjust light settings to suit individual crop species.

Researchers have also adopted new genetic techniques that speed up the generation of desirable characteristics in plants. Historically, humans have relied on a combination of natural variation followed by artificial selection to achieve these gains. Now, breeders use gene-editing tools to alter DNA with great speed and accuracy. In 2004, scientists working in Europe identified a variation on a single gene that made a type of barley resistant to a serious disease. Ten years later, researchers in China edited the same gene in wheat, one of the world’s most important crops, making it resistant as well.

Gene-editing tools have been used to protect rice against disease, to give corn and soybeans resistance to certain chemicals, and to save oranges from a type of bacteria that has destroyed crops in Asia and the Americas. In South Korea, scientists are using these tools to rescue an endangered variety of bananas from a devastating soil disease.

With cheaper, more powerful technology, opportunities are opening up to improve crops around the world. Dr. Hickey’s team plans to use these discoveries to help farmers in India, Zimbabwe and Mali over the next couple of years, since he wants the discoveries to benefit developing countries, too.

According to Hickey, we will need to combine speed breeding and gene editing with all the other tools we have if we are to meet the food security challenges of the future. “One technology alone,” he says, “is not going to solve our problems.”

However, while basic speed breeding is generally accepted, many are reluctant to embrace gene-editing technology. They worry about unexpected long-term consequences. The benefits of this revolutionary technology, they feel, must be weighed against its potential dangers.