

I 次の英文(A)と(B)を読み, それぞれの下線部の意味を日本語で表しなさい。

(A) Human beings are good at finding all the ways in which to be creative within prescribed limits — painting inside a rectangular frame, writing in iambic pentameters or composing a sonnet. Scientists sometimes like to study how that creativity occurs, what it achieves, and where else to look for inspiration. Many artists are nervous about scientific analysis. They fear its success, worried that art might lose its power, or they might be diminished, if the psychological roots of their work and its impact on us were exposed.

100 Essential Things You Didn't Know You Didn't Know About Maths & The Arts by John D. Barrow.
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(B) From a broad range of early cultures, extending back to about a million years, natural objects began to be used as tools and implements to supplement or enhance the capacities of the hand. For example, the hand is capable of clawing soil to dig out an edible root, but a digging stick or clam shell is also capable of being grasped to do the job more easily, in a sustainable manner, reducing damage to fingers and nails.

DESIGN: A VERY SHORT INTRODUCTION by John Heskett (2005): 77 words (p. 9).
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II 次の英文を読んで、以下の設問に答えなさい。

The source of every new idea is the same. There is a network of neurons in the brain, and then the network shifts. All of a sudden, electricity flows in an unfamiliar pattern, a shiver of current across a circuit board of cells. But sometimes a single network isn't enough. Sometimes a creative problem is so difficult that it requires people to connect their imaginations together; the answer arrives only if we collaborate. That's because a group is not just a collection of individual talents. Instead, it is a chance for those talents to exceed themselves, to produce something greater than anyone thought possible. When the right mixture of people come together and when they collaborate in the right way, what happens can often feel like magic. But it's not magic. There is a reason why some groups are more than the sum of their parts.

Furthermore, there's evidence that group creativity is becoming more necessary. Because we live in a world of very hard problems — all the low-hanging fruit is gone — many of the most important challenges exceed the capabilities of the individual imagination. As a result, we can find solutions only by working with other people.

Ben Jones, a professor of management at the Kellogg Business School, has demonstrated this by analyzing trends in “scientific production.” The most profound trend he's observed is a sharp shift toward scientific teamwork. By analyzing 19.9 million peer-reviewed papers and 2.1 million patents from the last fifty years, Jones was able to show that more than 99 percent of scientific subfields have experienced increased levels of teamwork, with the size of the average team increasing by about 20 percent per decade. While the most cited studies in a field used to be the product of lone geniuses — think Einstein or Darwin — Jones has demonstrated that the best research now emerges from groups. It doesn't matter if the researchers are studying particle physics or human genetics: science papers produced by multiple authors are cited more than

twice as often as those authored by individuals. This trend was even more ^② apparent when it came to “homerun papers”— those publications with at least a thousand citations — which were more than *six times* as likely to come from a team of scientists.

The reason is simple: the biggest problems we need to solve now require the expertise of people from different backgrounds who bridge the gaps between disciplines. Unless we learn to share our ideas with others, we will be stuck with a world of seemingly impossible problems. We can either all work together or fail alone.

But how should we work together? What’s the ideal strategy for group creativity? Brian Uzzi, a sociologist at Northwestern, has spent his career trying to answer these crucial questions, and he’s done it by studying Broadway ^③ musicals. Although Uzzi grew up in New York City and attended plenty of productions as a kid, he doesn’t exactly watch *A Chorus Line* in his spare time. “I like musicals just fine, but that’s not why I study them,” he says. Instead, Uzzi spent five years analyzing thousands of old musicals because he sees the art form as a model of group creativity. “Nobody creates a Broadway musical by themselves,” Uzzi says. “The production requires too many different kinds of talent.” He then rattles off a list of the diverse artists that need to work together: the composer has to write songs with a lyricist and librettist, and the choreographer has to work alongside the director, who is probably getting notes from the producers.

Uzzi wanted to understand how the relationships of these team members affected the end result. Was it better to have a group composed of close friends who had worked together before, or did total strangers make better theater? What is the ideal form of creative collaboration? To answer these questions, Uzzi undertook an epic study of nearly every musical produced on Broadway between 1877 and 1990, analyzing the teams behind 2,258 different productions. (To get a full list of collaborators, he often had to track down dusty old *Playbills*

in theater basements.) He charted the topsy-turvy relationships of thousands of different artists, from Cole Porter to Andrew Lloyd Webber.

The first thing Uzzi discovered was that the people who worked on Broadway were part of an extremely interconnected social network: it didn't take many links to get from the librettist of *Guys and Dolls* to the choreographer of *Cats*. Uzzi then came up with a way to measure the density of these connections for each musical, a designation he called Q .^④ In essence, the amount of Q reflects the "social intimacy" of people working on the play, with higher levels of Q signaling a greater degree of closeness. For instance, if a musical was being developed by a team of artists who had worked together several times before — this is common practice on Broadway, since producers see "incumbent teams" as less risky — that musical would have an extremely high Q . In contrast, a musical created by a team of strangers would have a low Q .

This metric allowed Uzzi to explore the correlation between levels of Q and the success of the musical. "Frankly, I was surprised by how big the effect was," Uzzi says. "I expected Q to matter, but I had no idea it would matter this much." According to the data, the relationship between collaborators was one of the most important variables on Broadway. The numbers tell the story: When the Q was low, or less than 1.7, the musicals were much more likely to fail. Because the artists didn't know one another, they struggled to work together and exchange ideas. "This wasn't so surprising," Uzzi says. "After all, you can't just put a group of people who have never met before in a room and expect them to make something great. It takes time to develop a successful collaboration." However, when the Q was too high (above 3.2) the work also suffered.^⑤ The artists were so close that they all thought in similar ways, which crushed theatrical innovation. According to Uzzi, this is what happened on Broadway during the 1920s. Although the decade produced many talented artists — Cole Porter, Richard Rodgers, Lorenz Hart, and Oscar Hammerstein II — it was also full of theatrical failures. (Uzzi's data revealed that 87 percent of musicals

produced during the decade were utter flops, which is far above the historical norm.) The problem, he says, is that all of these high-profile artists fell into the habit of collaborating with only their friends. “Broadway [during the 1920s] had some of the biggest names ever,” says Uzzi. “But the shows were too full of repeat relationships, and that stifled creativity. All the great talent ended up producing a bunch of mediocre musicals.”

What kind of team, then, led to the most successful musicals? Uzzi’s data ^⑥ clearly demonstrates that the best Broadway shows were produced with *intermediate* levels of social intimacy. A musical produced at the ideal level of Q (2.6) was two and a half times more likely to be a commercial success than a musical produced with a low Q (<1.4) or a high Q (>3.2). It was also three times more likely to be lauded by the critics. This led Uzzi to argue that creative collaborations have a sweet spot: “The best Broadway teams, by far, were those with a mix of relationships,” Uzzi says. “These teams had some old friends, but they also had newbies. This mixture meant that the artists could interact efficiently—they had a familiar structure to fall back on—but they also managed to incorporate some new ideas. They were comfortable with each other, but they weren’t *too* comfortable.”

Uzzi’s favorite example of intermediate Q is *West Side Story*, one of the most successful Broadway musicals of all time. In 1957, the play was seen as a radical departure from Broadway conventions, for both its willingness to tackle social problems and its extended dance scenes. At first, *West Side Story* might look like a play with a high Q , since several of its collaborators were already Broadway legends who had worked together before. ^⑦ The concept for the play emerged from a conversation among Jerome Robbins, Leonard Bernstein, and Arthur Laurents. But that conversation among old friends was only the beginning. As Uzzi points out, *West Side Story* also benefited from a crucial injection of unknown talent. A twenty-five-year-old lyricist named Stephen Sondheim was hired to write the words (even though he’d never worked on

Broadway before), while Peter Gennaro, an assistant to Robbins, provided many important ideas for the choreography. “People have a tendency to want to only work with their friends,” says Uzzi. “It feels so much more comfortable. But that’s exactly the wrong thing to do. If you really want to make something great, then you’re going to need to seek out some new people too.”

設問(1) 下線部①の意味を日本語で表しなさい。

設問(2) 下線部②の意味を This trend の内容を明らかにしたうえで日本語で表しなさい。

設問(3) 下線部③で述べられているように, Uzzi が Broadway musicals を研究対象にした理由を, 日本語でわかりやすく説明しなさい。

設問(4) 下線部④を 30 字程度の日本語でわかりやすく説明しなさい。

設問(5) 下線部⑤で述べられていることの理由を, 本文に即して日本語でわかりやすく説明しなさい。

設問(6) 下線部⑥の問いかけに対して Uzzi はどのような答えを提示しているか, その理由とともに日本語でわかりやすく説明しなさい。

設問(7) 下線部⑦の意味を日本語で表しなさい。

Extract from IMAGINE by Jonah Lehrer.
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Ⅲ 「知識は力なり」と言われます。知識をもつということはどんな力をもつことになるとおもいますか。具体例を挙げ、あなたの考えを 70 語程度の英語で述べなさい。

IV 次の日本文の下線部(1)~(3)の意味を英語で表しなさい。

芸術というものは、あってもなくてもいいようなものだけど、それが心に^{しみ}沁み⁽¹⁾入るといふ人もいふ。そういう人がいるから、私は生きていられるんです。私の絵など、この世にあってもなくてもいいんですから。

私の一本の線は、一生必要のない人がほとんどです。だけど、私の一本の線⁽²⁾を、気持ちがすっとした、なんとなく見るたびに自分がいきいきとしてくる、というような気持ちで見えてくれる人もいふでしょう。ごくたまには。

絵から、なにかを得たり、なにか考え方のヒントをもらえた、と思つていふ人⁽³⁾がいふとしたら、といふそれぐらいのことですよ。少しでも心動かされる人がいふれば、描いた甲斐があると思ひますね。

ですけど、そういうことが一切なくても、自分はやりたいことをやつた、といふ満足が第一ですよ。人がどう言おうと、自分はこういうものを描きたかつた、こういうかたちをつくりたかつた、そういうものができれば、それでいい。

(篠田桃紅 『百歳の力』)

V これから英語が2回読まれます。その内容について、以下の設問に日本語で答えなさい。

設問(1) 最も古い記憶を思い出す際に問題になることの一つとして Mary Courage 教授は何を挙げていますか。

設問(2) 「私」が三歳の頃、母親とともに病院に行った際に泣き出した理由は何ですか。

設問(3) 二歳頃から子供の記憶が発達していく理由として Courage 教授が挙げている三つの点を述べなさい。

設問(4) Courage 教授によれば、子供は三歳から五歳の間にどのようなことができるようになり、それはどのような効果をもちますか。

設問(5) Courage 教授はディズニー・ワールドに言及することによって、記憶に関するどのようなことを示そうとしていますか。

約5分後にリスニングテストを開始します。
リスニングテスト中は暖房を一時的に切ります。

<5分 ブランク>

これからリスニングの問題を始めます。問題用紙と解答用紙のV番を見てください。
これから英文が2回読まれます。よく聴いて内容を把握し、問題にすべて日本語で答えてください。解答はいつ始めてもかまいません。メモを取るのは自由です。

それでは始めましょう。

Do babies have memory? Sure they do. They recognize their favourite people and know that there are cookies in the red tin. That's memory. But chances are, the earliest memory that you can recall now dates back to about age three.

Mary Courage, a professor of child psychology, says that babies do have good memories, though they learn more slowly, forget more quickly, and take in less information at one time than older children. One of the major hurdles to retrieving earliest memories is the infant's lack of language. Professor Courage says: "Babies don't use language to encode their memories. When they're older and you ask them to retrieve the information, you're asking them to use verbal means, which is a big barrier." Think of it this way: It's like trying to open a Macintosh file with a Windows operating system.

My mother tells a story about me that illustrates this concept perfectly. When I was about three months old, I had to have an injection--a very painful procedure that can also cause a severe headache. When I was three years old, my mother took me along to one of her checkups at the hospital. As soon as I walked in the door, I started to cry. Asked what was wrong, I could only say, "The smell makes my head hurt." The memory was there, but it consisted pretty much entirely of sensory impressions.

Starting at about age two, says Professor Courage, advances on several developmental fronts strengthen the memory -- enough so that some adults are able to recall memories from this age. "There are improvements in many areas of the brain, especially in the cortex, as the brain starts to expand," says Courage. "This means that children can remember more things, they learn faster and remember longer. Another key is the development of a stronger sense of self -- that 'self acts like a big hanger that memories can be hooked onto."

Another reason why preschoolers are able to start retaining memories is that they are learning to talk, says Courage. "This opens up a whole new vista in children's ability to report what they remember."

The final pieces fall into place between the ages of three and five, when, says Courage, “children can use language to recount and talk about experiences. This is a rehearsal, going over and over the story, and this rehearsal means they are going to remember it better.”

So what memories are children most likely to carry with them into adulthood? In general, says Courage, distinctive experiences tend to be remembered better than routine events: “One trip to Disney World will be remembered. Four trips to Disney World will tend to blur together and won't have as much of an impact on memory.”

We don't necessarily want to remember everything from our childhoods. I have a very clear memory of climbing up onto the counter and getting a bottle of children's medicine out of the cupboard. I wanted that bottle for my doctor's kit and, since I knew I could only have empty bottles, I drank it before putting it into my case. And that's where the memory ends, not with the stomach pumping that followed.

もう一度読みます。

<繰り返し>

これでリスニングテストを終了します。引き続き解答を続けてください。