

Text 1

Microbes are tiny organisms in the soil, water, and air all around us. They thrive even in very harsh conditions. That's why Noah Fierer and colleagues were surprised when soil samples they collected from an extremely cold, dry area in Antarctica didn't seem to contain any life. The finding doesn't prove that there are no microbes in that area, but the team says it does suggest that the environment severely restricts microbes' survival.

Text 2

Microbes are found in virtually every environment on Earth. So it's unlikely they would be completely absent from Fierer's team's study site, no matter how extreme the environment is. There were probably so few organisms in the samples that current technology couldn't detect them. But since a spoonful of typical soil elsewhere might contain billions of microbes, the presence of so few in the Antarctic soil samples would show how challenging the conditions are.

Based on the texts, Fierer's team and the author of Text 2 would most likely agree with which statement about microbes?

- A. Most microbes are better able to survive in environments with extremely dry conditions than in environments with harsh temperatures.
- B. A much higher number of microbes would probably be found if another sample of soil were taken from the Antarctic study site.
- C. Microbes are likely difficult to detect in the soil at the Antarctic study site because they tend to be smaller than microbes found in typical soil elsewhere.
- D. Most microbes are probably unable to withstand the soil conditions at the Antarctic study site.

Text 1

The idea that time moves in only one direction is instinctively understood, yet it puzzles physicists. According to the second law of thermodynamics, at a macroscopic level some processes of heat transfer are irreversible due to the production of entropy—after a transfer we cannot rewind time and place molecules back exactly where they were before, just as we cannot unbreak dropped eggs. But laws of physics at a microscopic or quantum level hold that those processes *should* be reversible.

Text 2

In 2015, physicists Tiago Batalhão et al. performed an experiment in which they confirmed the irreversibility of thermodynamic processes at a quantum level, producing entropy by applying a rapidly oscillating magnetic field to a system of carbon-13 atoms in liquid chloroform. But the experiment “does not pinpoint ... what causes [irreversibility] at the microscopic level,” coauthor Mauro Paternostro said.

Based on the texts, what would the author of Text 1 most likely say about the experiment described in Text 2?

- A. It would suggest an interesting direction for future research were it not the case that two of the physicists who conducted the experiment disagree on the significance of its findings.
- B. It provides empirical evidence that the current understanding of an aspect of physics at a microscopic level must be incomplete.
- C. It is consistent with the current understanding of physics at a microscopic level but not at a macroscopic level.
- D. It supports a claim about an isolated system of atoms in a laboratory, but that claim should not be extrapolated to a general claim about the universe.

Text 1

In a study of the benefits of having free time, Marissa Sharif found that the reported sense of life satisfaction tended to plateau when participants had two hours of free time per day and actually began to fall when they had five hours of free time per day. After further research, Sharif concluded that this dip in life satisfaction mainly occurred when individuals spent all their free time unproductively, such as by watching TV or playing games.

Text 2

Psychologist James Maddux cautions against suggesting an ideal amount of free time. The human desire for both free time and productivity is universal, but Maddux asserts that individuals have unique needs for life satisfaction. Furthermore, he points out that there is no objective definition for what constitutes productivity; reading a book might be considered a productive activity by some, but idleness by others.

Based on the texts, how would Maddux (Text 2) most likely respond to the conclusion Sharif (Text 1) reached after her further research?

- A. By acknowledging that free time is more likely to enhance life satisfaction when it is spent productively than when it is spent unproductively
- B. By challenging the reasoning in Text 1, as it has not been proved that productivity commonly contributes to individuals' life satisfaction
- C. By warning against making an overly broad assumption, as there is no clear consensus in distinguishing between productive and unproductive activities
- D. By claiming that the specific activities named in Text 1 are actually examples of productive activities rather than unproductive ones

Text 1

The live music festival business is growing in event size and genre variety. With so many consumer options, organizers are finding ways to cement festival attendance as a special experience worth sharing. This phenomenon is linked to the growing “experiential economy,” where many find it gratifying to purchase lived experiences. To ensure a profitable event, venues need to consider the overall consumer experience, not just the band lineup.

Text 2

Music festival appearances are becoming a more important part of musicians’ careers. One factor in this shift is the rising use of streaming services that allow access to huge numbers of songs for a monthly fee, subsequently reducing sales of full-length albums. With this shift in consumer behavior, musicians are increasingly dependent on revenue from live performances.

Based on the texts, both authors would most likely agree with which statement?

- A. Consumers are more interested in paying subscription fees to stream music than in attending music festivals in person.
- B. Consumers’ growing interest in purchasing experiences is mostly confined to the music industry.
- C. Changing consumer behaviors are leading to changes in music-related businesses.
- D. The rising consumer demand for live music festivals also generates higher demand for music streaming platforms.

Text 1

Stage lighting theorist Adolphe Appia was perhaps the first to argue that light must be considered alongside all the various elements of a stage to create a single, unified performance. Researcher Kelly Bremner, however, has noted that Appia lacked technical expertise in the use of light in the theater. As a result of Appia's inexperience, Bremner argues, Appia's theory of light called for lighting practices that weren't possible until after the advent of electricity around 1881.

Text 2

Adolphe Appia was not an amateur in the practice of lighting. Instead, it is precisely his exposure to lighting techniques at the time that contributed to his theory on the importance of light. When working as an apprentice for a lighting specialist in his youth, Appia observed the use of portable lighting devices that could be operated by hand. This experience developed his understanding of what was possible in the coordination of elements on the stage.

Based on the texts, how would the author of Text 2 most likely respond to the claim about Appia's level of technical expertise made by Bremner in Text 1?

- A. Many lighting technicians dismissed Appia's ideas about light on the stage.
- B. Appia likely gained a level of technical expertise during his time as an apprentice.
- C. Theater practitioners who worked with Appia greatly admired his work.
- D. Appia was unfamiliar with the use of music and sound in theater.

Text 1

In 2021, a team led by Amir Siraj hypothesized that the Chicxulub impactor—the object that struck the Yucatán Peninsula sixty-six million years ago, precipitating the mass extinction of the dinosaurs—was likely a member of the class of long-period comets. As evidence, Siraj cited the carbonaceous chondritic composition of samples from the Chicxulub impact crater as well as of samples obtained from long-period comet Wild 2 in 2006.

Text 2

Although long-period comets contain carbonaceous chondrites, asteroids are similarly rich in these materials. Furthermore, some asteroids are rich in iridium, as Natalia Artemieva points out, whereas long-period comets are not. Given the prevalence of iridium at the crater and, more broadly, in geological layers deposited worldwide following the impact, Artemieva argues that an asteroid is a more plausible candidate for the Chicxulub impactor.

Based on the texts, how would Artemieva likely respond to Siraj's hypothesis, as presented in Text 1?

- A. By insisting that it overestimates how representative Wild 2 is of long-period comets as a class
- B. By arguing that it does not account for the amount of iridium found in geological layers dating to the Chicxulub impact
- C. By praising it for connecting the composition of Chicxulub crater samples to the composition of certain asteroids
- D. By concurring that carbonaceous chondrites are prevalent in soil samples from sites distant from the Chicxulub crater

Text 1

Philosopher G.E. Moore's most influential work entails the concept of common sense. He asserts that there are certain beliefs that all people, including philosophers, know instinctively to be true, whether or not they profess otherwise: among them, that they have bodies, or that they exist in a world with other objects that have three dimensions. Moore's careful work on common sense may seem obvious but was in fact groundbreaking.

Text 2

External world skepticism is a philosophical stance supposing that we cannot be sure of the existence of anything outside our own minds. During a lecture, G.E. Moore once offered a proof refuting this stance by holding out his hands and saying, "Here is one hand, and here is another." Many philosophers reflexively reject this proof (Annalisa Coliva called it "an obviously annoying failure") but have found it a challenge to articulate exactly why the proof fails.

Based on the texts, how would the author of Text 1 most likely respond to proponents of the philosophical stance outlined in Text 2?

- A. By agreeing with those proponents that Moore's treatment of positions that contradict his own is fundamentally unserious
- B. By suggesting that an instinctive distaste for Moore's position is preventing external world skeptics from constructing a sufficiently rigorous refutation of Moore
- C. By arguing that if it is valid to assert that some facts are true based on instinct, it is also valid to assert that some proofs are inadequate based on instinct
- D. By pointing out that Moore would assert that external world skepticism is at odds with other beliefs those proponents must unavoidably hold

Text 1

Because literacy in Nahuatl script, the writing system of the Aztec Empire, was lost after Spain invaded central Mexico in the 1500s, it is unclear exactly how meaning was encoded in the script's symbols. Although many scholars had assumed that the symbols signified entire words, linguist Alfonso Lacadena theorized in 2008 that they signified units of language smaller than words: individual syllables.

Text 2

The growing consensus among scholars of Nahuatl script is that many of its symbols could signify either words or syllables, depending on syntax and content at any given site within a text. For example, the symbol signifying the word *huipil* (blouse) in some contexts could signify the syllable "pil" in others, as in the place name "Chipiltepec." Thus, for the Aztecs, reading required a determination of how such symbols functioned each time they appeared in a text.

Based on the texts, how would the author of Text 2 most likely characterize Lacadena's theory, as described in Text 1?

- A. By praising the theory for recognizing that the script's symbols could represent entire words
- B. By arguing that the theory is overly influenced by the work of earlier scholars
- C. By approving of the theory's emphasis on how the script changed over time
- D. By cautioning that the theory overlooks certain important aspects of how the script functioned

Text 1

Digital art, the use of digital technology to create or display images, isn't really art at all. It doesn't require as much skill as creating physical art. "Painting" with a tablet and stylus is much easier than using paint and a brush: the technology is doing most of the work.

Text 2

The painting programs used to create digital art involve more than just pressing a few buttons. In addition to knowing the fundamentals of art, digital artists need to be familiar with sophisticated software. Many artists will start by drawing an image on paper before transforming the piece to a digital format, where they can apply a variety of colors and techniques that would otherwise require many different traditional tools.

Based on the texts, how would the author of Text 2 most likely respond to the claims of the author of Text 1?

- A. By arguing that a piece of art created digitally can still be displayed traditionally
- B. By explaining that it's actually much harder to use a tablet and stylus to create art than to use paint and a brush
- C. By insisting that digital art requires artistic abilities and skill even if it employs less traditional tools
- D. By admitting that most digital artists don't think fundamental drawing skills are important

Text 1

A tiny, unusual fossil in a piece of 99-million-year-old amber is of the extinct species *Oculudentavis khaungraae*. The *O. khaungraae* fossil consists of a rounded skull with a thin snout and a large eye socket. Because these features look like they are avian, or related to birds, researchers initially thought that the fossil might be the smallest avian dinosaur ever found.

Text 2

Paleontologists were excited to discover a second small fossil that is similar to the strange *O. khaungraae* fossil but has part of the lower body along with a birdlike skull. Detailed studies of both fossils revealed several traits that are found in lizards but not in dinosaurs or birds. Therefore, paleontologists think the two creatures were probably unusual lizards, even though the skulls looked avian at first.

Based on the texts, what would the paleontologists in Text 2 most likely say about the researchers' initial thought in Text 1?

- A. It is understandable because the fossil does look like it could be related to birds, even though *O. khaungraae* is probably a lizard.
- B. It is confusing because it isn't clear what caused the researchers to think that *O. khaungraae* might be related to birds.
- C. It is flawed because the researchers mistakenly assumed that *O. khaungraae* must be a lizard.
- D. It is reasonable because the *O. khaungraae* skull is about the same size as the skull of the second fossil but is shaped differently.

Text 1

Many studies in psychology have shown that people seek out information even when they know in advance that they have no immediate use for it and that they won't directly benefit from it. Such findings support the consensus view among researchers of curiosity: namely, that curiosity is not instrumental but instead represents a drive to acquire information for its own sake.

Text 2

While acknowledging that acquiring information is a powerful motivator, Rachit Dubey and colleagues ran an experiment to test whether emphasizing the usefulness of scientific information could increase curiosity about it. They found that when research involving rats and fruit flies was presented as having medical applications for humans, participants expressed greater interest in learning about it than when the research was not presented as useful.

Based on the texts, how would Dubey and colleagues (Text 2) most likely respond to the consensus view discussed in Text 1?

- A. By suggesting that curiosity may not be exclusively motivated by the desire to merely acquire information
- B. By conceding that people may seek out information that serves no immediate purpose only because they think they can use it later
- C. By pointing out that it is challenging to determine when information-seeking serves no goal beyond acquiring information
- D. By disputing the idea that curiosity can help explain apparently purposeless information-seeking behaviors

Text 1

Polar bears sustain themselves primarily by hunting seals on the Arctic sea ice, but rising ocean temperatures are causing the ice to diminish, raising concerns about polar bear population declines as these large predators' seal-hunting habitats continue to shrink. A 2020 study examining polar bear populations across the Arctic concluded that populations affected by sea-ice loss are at great risk of extinction by the end of the twenty-first century.

Text 2

Monitoring carried out by researchers from the Norwegian Polar Institute shows that the polar bear population on the Arctic archipelago of Svalbard remains stable and well nourished despite rapidly declining sea ice in recent years. The researchers attribute this population's resilience in part to a shift in feeding strategies: in addition to hunting seals, the Svalbard polar bears have begun relying on a diet of reindeer meat and birds' eggs.

Based on the texts, how would the researchers in Text 2 most likely respond to the conclusion presented in the underlined portion of Text 1?

- A. By noting that it neglects the possibility of some polar bear populations adapting to changes in their environment
- B. By suggesting that it is likely incorrect about the rates at which warming ocean temperatures have caused sea ice to melt in the Arctic
- C. By asserting that it overlooks polar bear populations that have not yet been affected by loss of seal-hunting habitats
- D. By arguing that it fails to account for polar bears' reliance on a single seal-hunting strategy