

BUILDING VOCABULARY

A. Complete the paragraph with the words below.

challenges

illustrates

primarily

specifically

Finding the right light is one of the main _____₁ of photographing nature. Experts suggest taking photographs _____₂ when the weather is overcast. If you shoot mainly when there are clouds in the sky, your images will have more intense colors. The photo below of a rice plantation in Indonesia _____₃ this idea. The photographer shot the picture on a cloudy day, which intensified the deep green of the rice terraces. Another problem nature photographers sometimes have is finding the right background. Experts suggest looking for subjects in environments without any manmade structures that will interfere with the image; _____₄, they suggest finding locations where there are no fences, utility poles, or buildings.

Jatiluwi rice terraces in Bali, Indonesia
photographed by Jim Richardson

B. Choose the correct definition for each of the bold words.

1. The quotation “Look deep into nature, and then you will understand everything better” is **attributed to** Albert Einstein.
 - a. believed to be from
 - b. a way to describe
2. Climate change is one of the most important environmental **issues** that we face today.
 - a. topics
 - b. documents
3. Extreme weather events present a **constant** reminder that global warming is a serious problem.
 - a. conflicting
 - b. continuous
4. You can **reinforce** an appreciation of nature by taking city children on wilderness field trips.
 - a. strengthen
 - b. introduce
5. Spending a few days in the wilderness can completely **transform** the way some children see the world.
 - a. confuse
 - b. change
6. Some photographers travel the world **documenting** the lives of people in war-torn countries.
 - a. providing evidence for
 - b. making a record of

GETTING MEANING FROM CONTEXT

Note answers to the questions and discuss your ideas with a partner.

1. What do you think Louie Schwartzberg means when he says, “I found my voice with photography”?

2. What does Schwartzberg mean by a “nature deficit disorder”?

CRITICAL THINKING

1. **Interpreting.** Look again at Schwartzberg’s answer to the final question in the interview. How does he compare explorers and scientists with filmmakers and artists? What do you think he means by “different rules”? Explain your ideas to a partner.
2. **Reflecting.** Have you seen any images—in photographs or on film—that have changed your thinking or the way that you view the world? If so, describe the images and explain how they changed your perspective.

EXPLORE MORE

See more of Louie Schwartzberg’s images of the natural world by watching his TED Talk “The hidden beauty of pollination.” What does it reveal about the relationship between plants and insects? Share your information with the class.

HIDDEN MIRACLES OF THE NATURAL WORLD

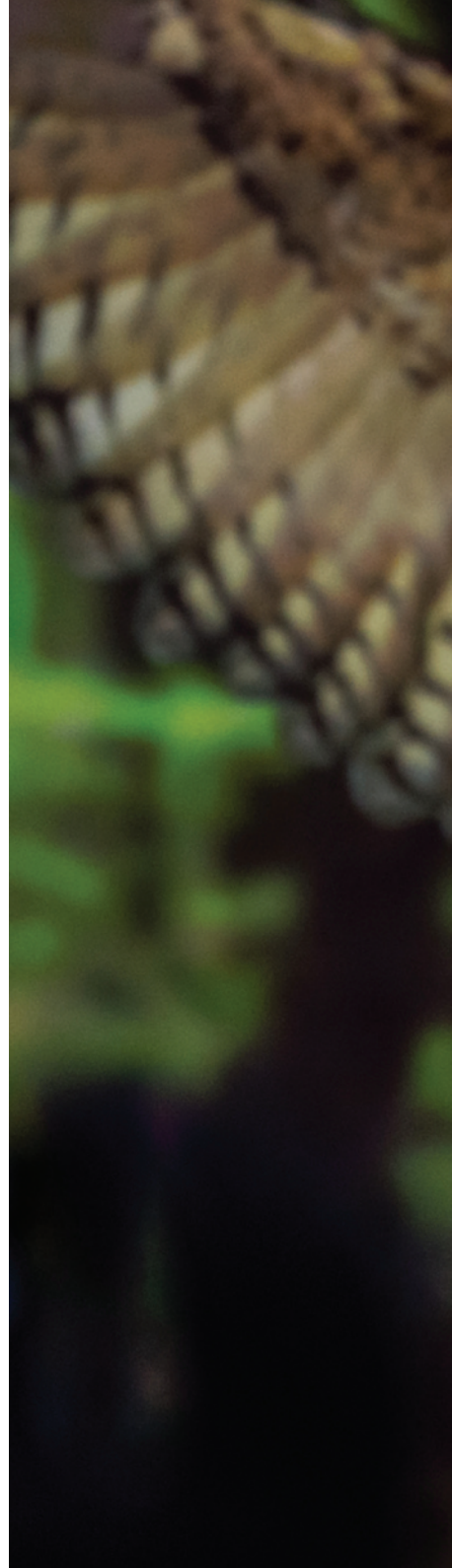
LOUIE SCHWARTZBERG Filmmaker, TED speaker

🔊 Like many of us, Louie Schwartzberg has always loved looking at beautiful flowers. In doing so, he has realized something important about them: They help us understand that everything is connected in the natural world.

After graduating from college, Schwartzberg decided to live a simple life in the countryside. He had no phone and no TV. With few distractions, he had all the time in the world to follow his passion: filming flowers using time-lapse photography. His work has helped him understand the connections between different plants and animals—including humans. He believes that our connection to nature can bring great happiness. He believes it can help us live in the moment and be grateful for what we have.

Today, Schwartzberg hopes that his work will not only help people find happiness in the beauty of nature, but also inspire them to protect and sustain the planet.

sustain: v. to keep in existence by providing support, strength, or necessities





Schwartzberg's **idea worth spreading** is that technology enables us to see things differently. It can change our beliefs about nature and our place in it.

In this lesson, you are going to watch Schwartzberg's talk. Use the information on page 18 to answer each question.

1. How do you think Schwartzberg's lifestyle choices after college contributed to his later work?

2. What two effects does Schwartzberg hope his work will have?

PART 1

A NEW WAY OF SEEING

PREVIEWING

- A.** Read the excerpt below from Schwartzberg's talk. What do you think you will see in *Mysteries of the Unseen World*?

- B.** What words do you think are missing in the excerpt? Check your ideas as you watch (▶) the first segment of the TED Talk.

« What is the intersection between technology, art, and science? Curiosity and wonder, because it drives us to explore, because we're _____₁ by things we can't see. And I love to use film to take us on a _____₂ through portals of time and space, to make the invisible visible, because what that does, it _____₃ our horizons, it transforms our perception, it _____₄ our minds, and it touches our heart. So here are some scenes from my 3D IMAX film, *Mysteries of the Unseen World*. »

intersection: *n.* a point where two or more things or ideas connect

portals: *n.* entrances, doors

UNDERSTANDING MAIN IDEAS

Check (✓) the two main ideas of this part of the talk.

Time-lapse can show us things that . . .

1. _____ are very old.
2. _____ move or grow very slowly.
3. _____ act in an unusual way.
4. _____ are extremely fast.
5. _____ occur very rarely.

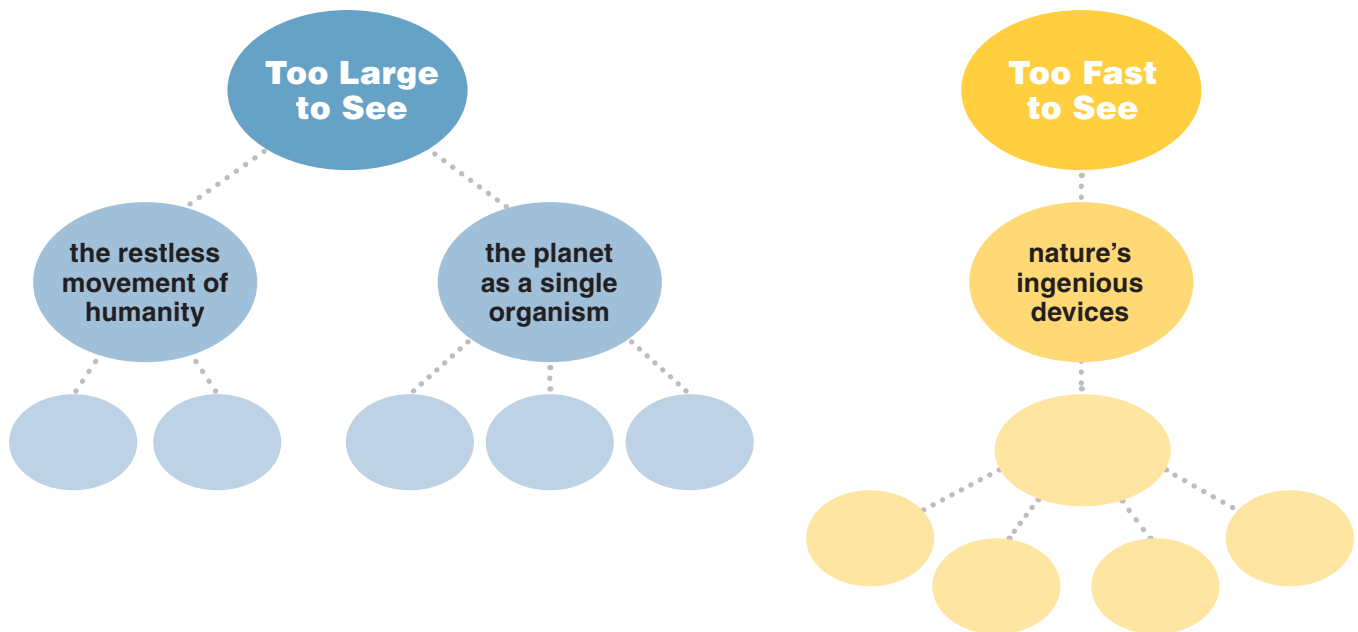


▲ A brown-spotted yellow-wing dragonfly alights on a twig.

CONNECTING MAIN IDEAS AND DETAILS

A. Complete the mind map. Match the main ideas from Schwartzberg's talk with the examples.

- | | | |
|--------------------|---------------------------------------|---------------------|
| a. air flow | e. clouds | h. air traffic data |
| b. insect movement | f. flying backwards | i. aurora borealis |
| c. hovering | g. four wings in different directions | j. lightning |
| d. ships at sea | | |



B. Now use the mind map and information from this part of the talk to answer these questions.

1. Why does Schwartzberg say the dragonfly is the greatest flier in nature?

2. According to Schwartzberg, what kinds of devices might we be able to create as a result of seeing insect movement close up?

CRITICAL THINKING

Predicting. What else do you think time-lapse photography might allow us to see? Would it be mainly to capture the beauty of nature, or do you think there could be some practical application?

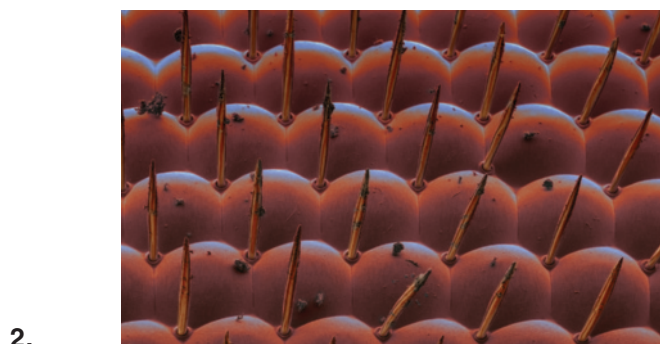
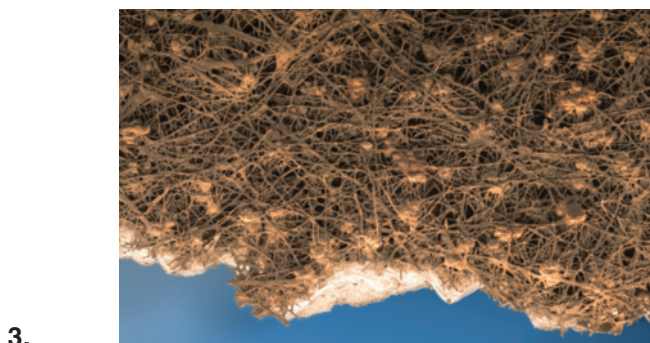
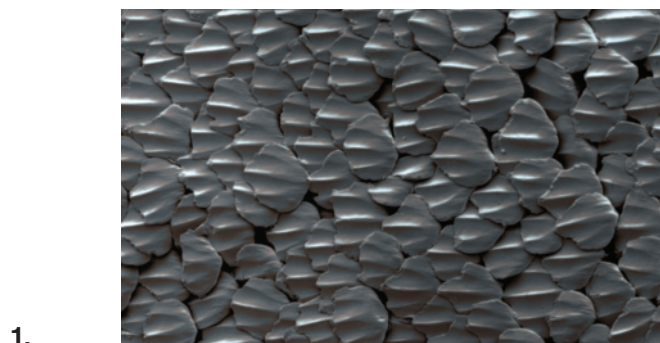
PART 2

STRANGE NEW WORLDS

PREDICTING

What do you think these images show? Work with a partner to match each picture with a caption. Check your ideas as you watch (▶) the next part of Schwartzberg's talk.

- a. a snail's tongue b. a fruit fly's eye c. shark skin d. an eggshell



UNDERSTANDING KEY DETAILS

Use information from Schwartzberg's TED Talk to answer these questions.

1. What is special about spider silk?

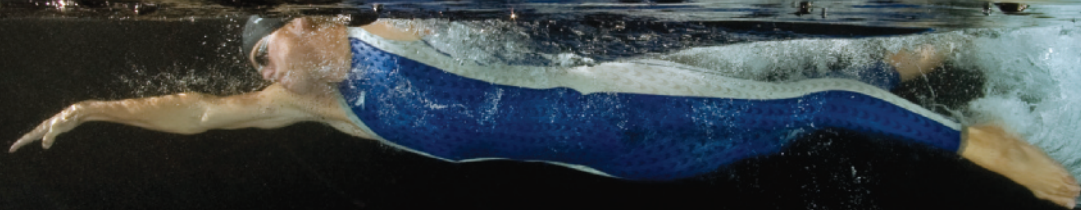
It is _____ than human hair but _____ than steel.

2. What might nano devices be able to do someday?

Patrol our bodies for _____, _____ arteries, and _____ DNA.

EXPLORE MORE

Find out more about Louie Schwartzberg's film *Mysteries of the Unseen World* at movies.nationalgeographic.com. Share your information with the class.



A. Work with a partner. You are going to find out about how something in nature has inspired a particular technology or invention.

1. Go to TED.com. Watch some of the following TED Talks to get ideas for nature-inspired inventions:
 - Janine Benyus, “Biomimicry in action”
 - Hamish Jolly, “A shark-deterrent wetsuit”
 - Michael Pawlyn, “Using nature’s genius in architecture”
 - Cheryl Hayashi, “The magnificence of spider silk”
 - Markus Fischer, “A robot that flies like a bird”
2. With your partner, choose one of the technologies or inventions in the TED Talks you saw, and answer these questions about it.
 - What is the invention or technology?
 - What thing (animal, plant, etc.) in nature inspired the invention? Describe the properties that seem particularly useful or interesting.
 - How does the invention or technology work?
 - What are its applications?

3. Use your information to create a two-minute presentation. You can use drawings, photos, and video to explain your information.

B. Work with two other pairs.

- Give your presentations.
- As you listen, take notes.
- At the end, review your notes.
- Discuss: Which invention inspired by nature is the most interesting to you? Why?

EXPLORE MORE

Learn more about how nature has inspired new inventions and technologies at ngm.nationalgeographic.com/geopedia/Biomimetics. Share your information with the class.