

PATHWAYS

THIRD
EDITION

Reading, Writing, and Critical Thinking



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ON THE COVER

The two pyramids in this artwork by Rashed AlShashai represent “civilization” and “commerce.” AlUla, Saudi Arabia
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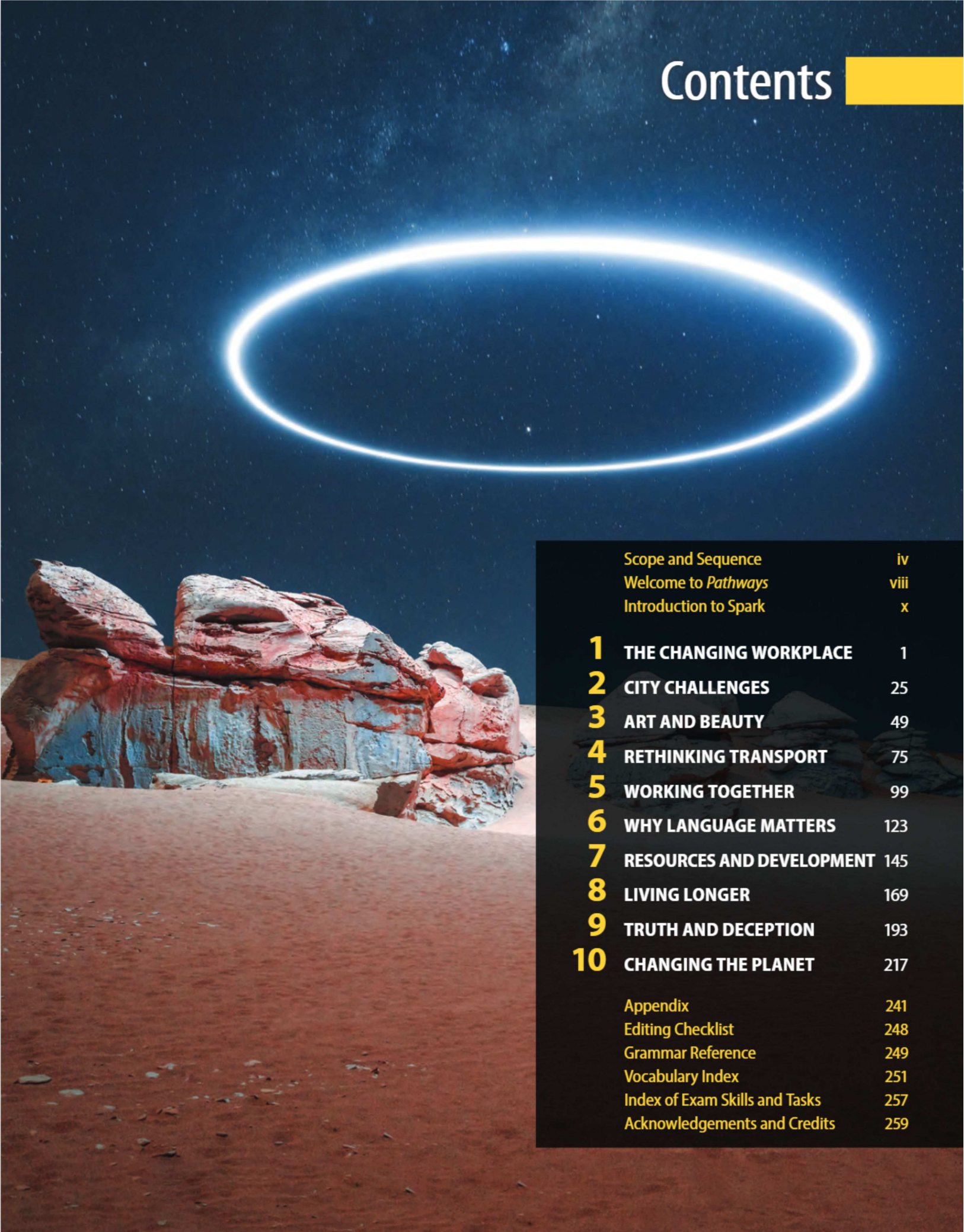
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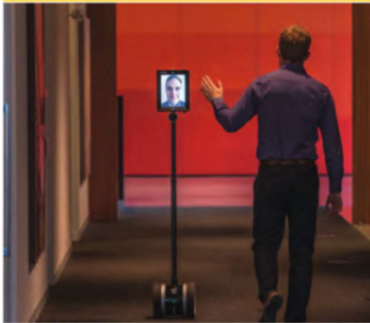
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Scope and Sequence

Unit Title and Theme



1
**THE CHANGING
WORKPLACE**
page 1
Career Studies

Explore the Theme
The Evolution of Office Work
Reading
The Robot Revolution Has Arrived
VIDEO Sylvia Earle: A Woman in Science



2
CITY CHALLENGES
page 25
Urban Studies

Explore the Theme
What Is a Good City?
Reading
Wild Cities
VIDEO Turning to Nature



3
ART AND BEAUTY
page 49
Sociology/Art

Explore the Theme
Art in a New Light
Reading
Making an Impact Through Art
VIDEO Photo Contest



4
RETHINKING TRANSPORT
page 75
Global Studies/Business Studies

Explore the Theme
Going Electric
Reading
Green Air Travel
VIDEO A Driverless Future








5
WORKING TOGETHER
page 99
Social Science

Explore the Theme
Collaboration
Reading
The Smart Swarm
VIDEO Ant Teamwork

Reading	Critical Thinking	Vocabulary	Writing
<p>Reading Skill Understanding Cohesion Understand the Main Idea, Understand Main Ideas, Understand Details</p>	<p>Critical Thinking Skill Recognizing Claims and Counterclaims Predict, Infer Meaning, Reflect, Personalize</p>	<p>Vocabulary Extension <i>artificial</i> + Noun; <i>-ize</i> and <i>-ization</i></p>	<p>Language for Writing Using Cohesive Devices</p> <p>Writing Skill Organizing an Essay</p> <p>GOAL Write an essay describing how an emerging technology will impact jobs in the future.</p>
<p>Reading Skill Understanding Appositives Understand Main Ideas, Understand Details</p>	<p>Critical Thinking Skill Understanding How Information is Organized Predict, Summarize, Compare, Infer Meaning, Reflect</p>	<p>Vocabulary Extension Nouns/Adjectives + <i>constrsaint</i>; Words with <i>counter-</i></p>	<p>Language for Writing Using Appositives</p> <p>Writing Skill Structuring a Problem-Solution Essay</p> <p>GOAL Write a problem-solution essay about an urban challenge.</p>
<p>Reading Skill Using a Concept Map Understand Main Ideas, Understand Details</p>	<p>Critical Thinking Skill Applying Ideas Predict, Summarize, Infer Meaning, Reflect, Apply</p>	<p>Vocabulary Extension <i>ambi-</i>; <i>trigger</i> + Noun</p>	<p>Language for Writing Using Relative Clauses</p> <p>Writing Skill Supporting a Thesis</p> <p>GOAL Write an essay evaluating an example of visual art using aesthetic criteria.</p>
<p>Reading Skill Recognizing and Evaluating Different Viewpoints Understand Main Ideas, Understand Details</p>	<p>Critical Thinking Skill Understanding Multiword Phrases Predict, Infer Meaning, Evaluate, Reflect</p>	<p>Vocabulary Extension Business Words and Antonyms; <i>-ion</i> and <i>-ive</i></p>	<p>Language for Writing Writing Sentences with Initial Phrases</p> <p>Writing Skill Organizing a Comparative Essay</p> <p>GOAL Write an essay comparing two companies in the same industry.</p>
<p>Reading Skill Understanding Complex Sentences Understand Main Ideas, Understand Purpose, Use a Concept Map</p>	<p>Critical Thinking Skill Evaluating Sources Predict, Infer Meaning, Analyze and Apply, Compare</p>	<p>Vocabulary Extension <i>co-</i>, <i>com-</i>, <i>col-</i>; <i>-ate</i> and <i>-ion</i></p>	<p>Language for Writing Avoiding Plagiarism (I)—Paraphrasing</p> <p>Writing Skill Writing a Summary</p> <p>GOAL Write a summary of the reading passage, <i>The Smart Swarm</i>.</p>

Scope and Sequence

Unit Title and Theme		
	6 WHY LANGUAGE MATTERS <i>page 123</i> Anthropology/Sociology	Explore the Theme Our Words Are Our Reality Reading Is Joy the Same in Every Language? VIDEO Discovering a Hidden Language
	7 RESOURCES AND DEVELOPMENT <i>page 145</i> Economics	Explore the Theme 8 Billion People Reading The Shape of Africa VIDEO Honey and Pepper
	8 LIVING LONGER <i>page 169</i> Health	Explore the Theme Life Expectancy in the Animal Kingdom Reading Beyond 100 VIDEO Longevity Village
	9 TRUTH AND DECEPTION <i>page 193</i> Psychology	Explore the Theme The Best Policy? Reading Why We Lie VIDEO Learning to Lie
	10 CHANGING THE PLANET <i>page 217</i> Environmental Studies	Explore the Theme The Human Impact Reading The Human Age VIDEO Trees of Life

Reading	Critical Thinking	Vocabulary	Writing
<p>Reading Skill Understanding Figurative Language Scan, Understand Main Ideas, Understand Details</p>	<p>Critical Thinking Skill Understanding Loaded Words Synthesize, Infer Meaning, Interpret and Analyze, Reflect</p>	<p>Vocabulary Extension Words for looking at things; Expressions with <i>horizon</i></p>	<p>Language for Writing Adding Information with Verbal Phrases Writing Skill Writing Introductions and Conclusions GOAL Write an essay about the best way to learn a new language outside of school.</p>
<p>Reading Skill Annotating a Text Understand Main Ideas, Understand Details</p>	<p>Critical Thinking Skill Analyzing Point of View Predict, Understand Chronology, Infer Meaning, Evaluate, Infer</p>	<p>Vocabulary Extension Adjective + <i>economy</i>; <i>distinct</i> + Noun</p>	<p>Language for Writing Avoiding Plagiarism (II)—Referring to Sources Writing Skill Doing Research Online GOAL Write an opinion essay about how a country or region has been affected by its geography and history.</p>
<p>Reading Skill Asking Questions as You Read Skim, Understand Main Ideas, Understand Details, Understand Supporting Examples</p>	<p>Critical Thinking Skill Interpreting Visual Data Predict, Infer Meaning, Reflect, Synthesize, Evaluate</p>	<p>Vocabulary Extension Words and phrases with <i>life</i>; <i>out-</i></p>	<p>Language for Writing Explaining the Significance of Evidence Writing Skill Planning an Argumentative Research Paper GOAL Write an essay about whether governments should invest in helping people live beyond 100 years.</p>
<p>Reading Skill Understanding a Research Summary Understand Main Ideas, Understand Details</p>	<p>Critical Thinking Skill Evaluating Research Predict, Infer Meaning, Interpret, Interpret Visual Data, Apply</p>	<p>Vocabulary Extension <i>-ence</i> and <i>-ance</i>; <i>deceit</i> and <i>deception</i></p>	<p>Language for Writing Introducing Results and Describing Data Writing Skill Summarizing a Research Study GOAL Write an essay summarizing a famous research study.</p>
<p>Reading Skill Understanding Rhetorical Purpose Understand the Main Idea, Understand Main Ideas</p>	<p>Critical Thinking Skill Synthesizing Information Predict, Brainstorm, Summarize, Interpret Visual Data, Infer Meaning, Reflect</p>	<p>Vocabulary Extension <i>-logy</i>; <i>dramatic</i> + Noun</p>	<p>Language for Writing Using a Variety of Sentence Types Writing Skill Reviewing Essay Writing GOAL Write an essay about how the activities of a charity are having a positive impact on the environment.</p>

THE CHANGING WORKPLACE

1



A “telepresence” robot in an office in Toronto, Canada

IN THIS UNIT, YOU WILL:

- Read an article about working with robots
- Watch a video about women in the workforce
- Write about technology and the workplace

THINK AND DISCUSS:

1. In the photo above, an office worker greets a remotely-operated “telepresence” robot. Why do you think this robot was created?
2. Do you think robots like these will become more popular? Why or why not?

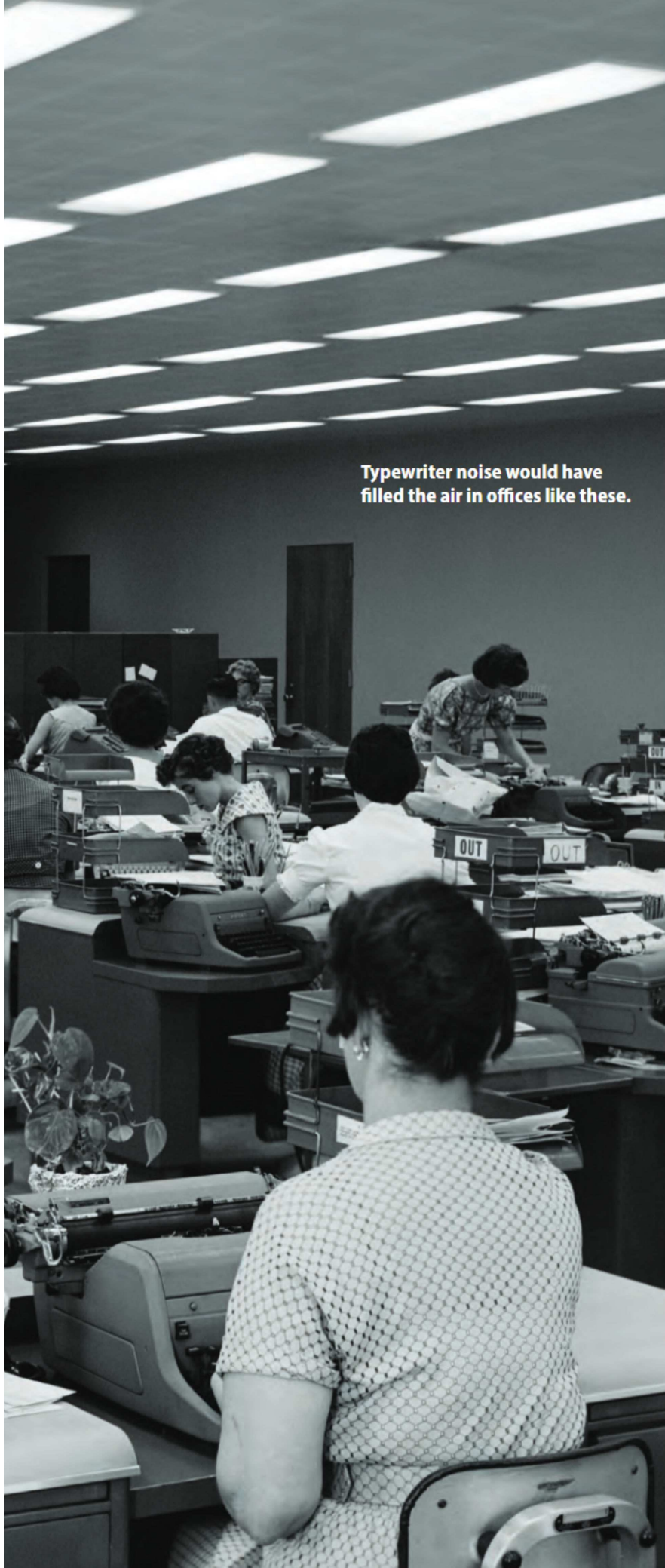
EXPLORE THE THEME

Look at the information on these pages and answer the questions.

1. Which decade do you think the photo is from? Why?
2. Which decade in the timeline do you think saw the most important developments? Why?
3. How do you think offices in the future will be different? Give reasons.

The Evolution of Office Work





Typewriter noise would have filled the air in offices like these.

Offices may have existed since the 18th century, but they have changed dramatically over time.

1950s More women become office workers. Offices resemble factory floors: employees work in tight rows while managers watch.

1960s Employees work in cubicles—small spaces with partitions to minimize distractions.

1970s Dress codes are loosened. Computers and fax machines begin making their way into offices, replacing typewriters.

1980s Work-life balance becomes a buzzword, and corporate culture becomes a priority. Personal computers become indispensable.

1990s Job-hopping becomes the norm. Companies do more to retain their employees. The internet is born.

2000s Manual work becomes less important. Companies prioritize social and analytical skills.

2010s Globalization results in multinational workforces. Faster internet speeds make telecommuting practical.

2020s Many offices downsize. Hot-desking catches on. Employees no longer have fixed desks: they have shared spaces.

Reading

PREPARING TO READ

- **A BUILD VOCABULARY** The words in **blue** are used in the reading passage. Read the text below. Then write the correct form of each word next to its definition.

Today, moving **assembly** lines are a staple of production. However, in the early 1900s, the concept was new—at least in the world of automobile manufacturing. In 1913, Henry Ford, **founder** of the Ford Motor Company, became the first car maker to use this method to manufacture vehicles.

Ford had wanted to **accelerate** car production for a long time. Traditional car assembly was **troublesome**: each worker was responsible for an entire section of the vehicle, which they had to put together manually on a production floor. This meant that they had to be both highly skilled and strong, as the heavy components needed to be dragged across long distances. On average, it took about 12 hours to assemble a single car this way.



Ford's moving assembly line broke the process down into 84 distinct steps. Each worker focused on just one small step—a much simpler, **repetitive** task that was easier to learn, perform, and **master**. This greatly reduced production time: workers could now consistently produce cars at a rate of one every 93 minutes.

Ford's breakthrough had a major **influence** on the automobile industry. It not only reduced production times, but also costs. His success **spurred** other car makers to adopt moving assembly lines in their own factories to remain competitive and meet growing demands.

1. _____ (adj) difficult and complicated
2. _____ (adj) involving the same action being done many times
3. _____ (v) to increase the speed at which something is done
4. _____ (v) to encourage someone to take action
5. _____ (v) to become highly skilled at something
6. _____ (n) the process of building something by putting parts together
7. _____ (n) a person who starts a company or an organization
8. _____ (n) the ability to effect change in someone or something

B BUILD VOCABULARY Complete the sentences below with the correct form of the words and phrases in **blue**. Use a dictionary to help you.

automation (n) executive (n) imaginary (adj) incentive (n)
inevitable (adj) maximize (v) relate to (v)

1. Today, robots are a part of our everyday lives, not just _____ machines that exist solely in science fiction.
2. If you want to _____ your productivity at the office, try going in early for some quiet time so you can get your work done before everyone else arrives.
3. Despite our very different cultural backgrounds, we find it really easy to _____ each other.
4. Management is offering larger bonuses as a(n) _____ for hitting our sales targets this year.
5. This isn't up to us. It's a decision for the senior account _____.
6. Many factory workers fear that _____ will result in machines taking away manufacturing jobs from people.
7. The company hired far too many people last year, so this year's job cuts were _____.

C USE VOCABULARY Discuss these questions with a partner.

1. What are some of the downsides of having to do the simpler, more **repetitive** tasks required of **assembly**-line workers?
2. Think about the skilled mechanics Ford used to hire. How do you think they would have felt about the switch to assembly lines? Can you **relate to** the concerns they may have had?
3. While many people worry that **automation** will result in significant job losses, others argue that it will make up for this by creating new types of jobs. Which side of the argument do you think is more convincing and why?

D PREDICT Look at the photos in the reading passage. Then read the title of the reading passage and the first sentence of each paragraph. Answer the questions in your own words. Then read the passage and check your answers.

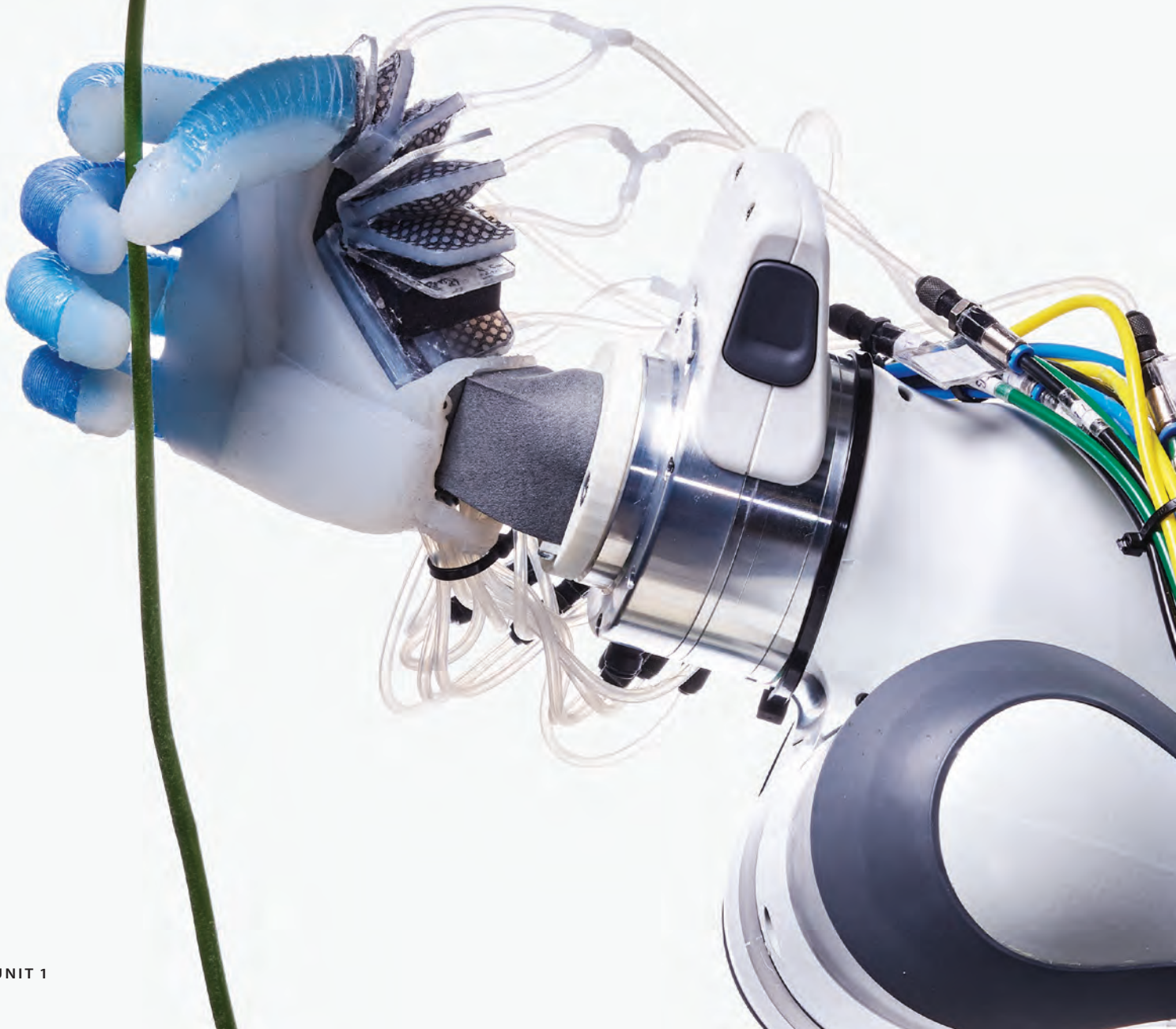
Critical Thinking

1. What is the reading passage about?


2. What industries or sectors do you think the reading passage will cover?

The **ROBOT** **REVOLUTION** Has Arrived

By David Berreby

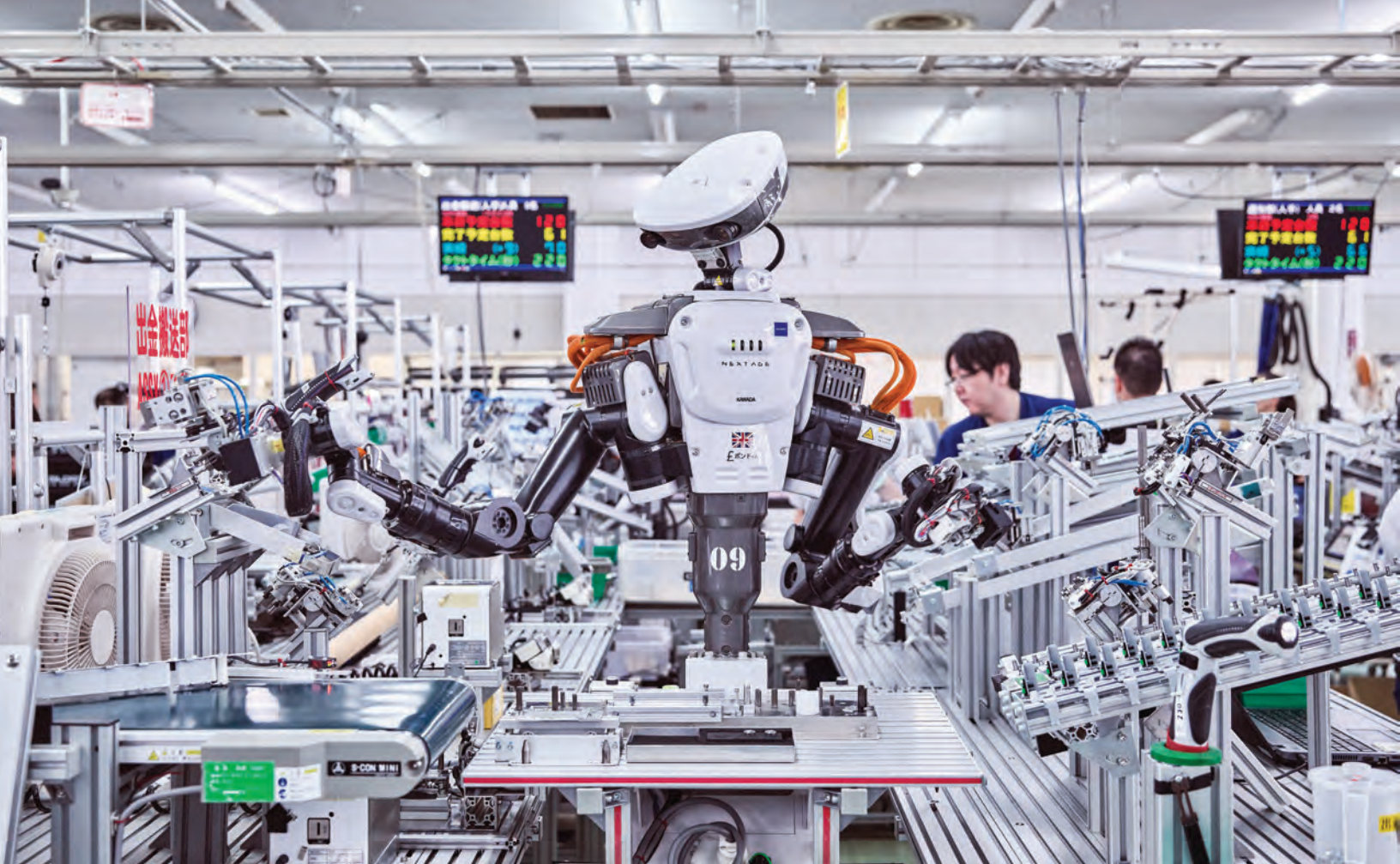


Robots are no longer a thing of science fiction. They are already here.

- A**  The word “robot” was coined by the Czech writer Karel Čapek in 1920, in a play that set the template for a century’s machine dreams and nightmares. The robots in that play look and act like people, do all the work of humans—and wipe out the human race before the curtain falls.
- B** Ever since, **imaginary** robots—from the *Terminator*, to *Astro Boy*, to *Star Wars*’s droids—have had a huge **influence** on the plans of robot-makers. They have also shaped the public’s expectations of what robots are and what they can do.
- C** I met a robot on a bright, windy day last January, near Colorado’s border with Kansas, in the company of a 31-year-old from San Francisco named Noah Ready-Campbell. To the south, wind turbines stretched to the horizon in uneven ranks, like a silent army of shiny three-armed giants. In front of me was a hole that would become the foundation for another one.
- D** A Caterpillar 336 excavator was digging that hole—62 feet (19 meters) wide, with walls that sloped up at a 34-degree angle, and a floor 10 feet (3 meters) deep and almost perfectly level. The Cat piled the dug-up earth on a spot where it wouldn’t get in the way; it would start a new pile when necessary. Every dip, dig, raise, turn, and drop of the 41-ton machine required firm control and careful judgment.
- E** The seat in this excavator, though, was empty. The operator lay on the cab’s roof. It had no hands; three snaky black cables linked it directly to the excavator’s control system. It had no eyes or ears either, since it used lasers, GPS, video cameras, and gyroscope¹-like sensors. Ready-Campbell, co-**founder** of a San Francisco company called Built Robotics, walked across the dirt, climbed onto the excavator, and lifted the lid of a fancy luggage carrier on the roof. Inside was his company’s product—a 200-pound (90-kilogram) device that does work that once required a human being.
- F** “This is where the AI runs,” he said, pointing into the collection of circuit boards, wires, and metal boxes that made up the machine: Sensors to tell it where it is, cameras to let it see, controllers to send its commands to the excavator, communication devices that allow humans to monitor it, and the processor where its artificial intelligence makes the decisions a human driver would. “These control signals get passed down to the computers that usually respond to the joysticks² and pedals in the cab.”

¹ A **gyroscope** is a device used to stabilize machines and keep them level or upright.

² A **joystick** is a lever that people use to electronically control machines.



▲ A robot helps make change dispensers in a factory in Kazo, Japan.

- G When I was a child in the 20th century, hoping to encounter a robot when I grew up, I expected it would look and act human, like C-3PO from *Star Wars*. Instead, the real robots that were being set up in factories were very different. Today, millions of these industrial machines bolt, weld, paint, and do other **repetitive, assembly**-line tasks. Often fenced off to keep the remaining human workers safe, they are what roboticist Andrea Thomaz at the University of Texas has called “mute and brute” behemoths.³
- H Ready-Campbell’s device isn’t like that. And of course it isn’t like C-3PO, either. It is, instead, a new kind of robot, far from human but still smart, adept, and mobile. Once rare, these devices—designed to work with people who have never met a robot—are moving steadily into daily life.
- I Even before the COVID crisis added its impetus, technological trends were **accelerating** the creation of robots that could fan out into our lives. Mechanical parts got lighter, cheaper, and sturdier. Electronics packed more computing power into smaller packages. Breakthroughs let engineers put powerful data-crunching tools into robot bodies. Better digital communications let them store robot “brains” in a computer elsewhere—or connect the minds of hundreds of robots, letting them share a collective intelligence, like bees in a beehive.

³Behemoth is a term used to describe extremely large creatures or machines.

J Today, robots take inventory⁴ and clean supermarket floors. They shelve goods and fetch them for mailing in warehouses. They cut lettuce and pick apples and even raspberries. They help autistic⁵ children socialize, and stroke victims regain the use of their arms and legs. Robots now deliver food in Milton Keynes, England, tote supplies in a Dallas hospital, and disinfect hospital rooms in China and Europe.

K According to Daron Acemoglu, an economist at MIT who has studied the effects of robots and other **automation**, there is a particular zeitgeist⁶ among many technologists and managers that humans are **troublesome**. Robots, after all, don't need paid vacations or medical insurance. Furthermore, many nations actually encourage automation with tax breaks and other **incentives**. Companies thus save money by cutting employees and adding robots.

L Back at the wind farm site in Colorado, **executives** from the Mortenson Company, a Minneapolis-based construction firm that has hired Built's robots since 2018, told me about a dire⁷ shortage of skilled workers in their industry. Built robots dug 21 foundations at the wind farm.

⁴To take inventory is to update records of the items available in a store or warehouse.

⁵To be autistic is to have autism, a neurological condition that often affects social and communication skills.

⁶Zeitgeist refers to the mood or spirit of a specific period of time.

⁷If a situation is dire, it is extremely urgent.

▼ A driverless harvesting robot uses suction to pick apples from trees in Washington State, U.S.A.



This robot in Japan is operated remotely by a secretary with disability, allowing her to do her job from home.



- M** “Operators will say things like, Oh, hey, here come the job killers,” said Derek Smith, lean innovation⁸ manager for Mortenson. “But after they see that the robot takes away a lot of repetitive work and they still have plenty to do, that shifts pretty quickly.”
- N** Once the robot excavator finished the dig we’d watched, a human on a bulldozer⁹ smoothed out the work and made ramps. “On this job, we have 229 foundations, and every one is basically the same spec,” Smith said. “We want to take away tasks that are repetitive. Then our [human] operators concentrate on the tasks that involve more art.”
- O** Robots can be programmed or trained to do a well-defined task—dig a foundation, or harvest lettuce—better or at least more consistently than humans can. But none can equal the human mind’s ability to do a lot of different tasks, especially unexpected ones. None has yet **mastered** common sense.
- P** Today’s robots can’t match human hands either, said Chico Marks, a manufacturing engineering manager at Subaru’s auto plant in Lafayette, Indiana. “Routing a wiring harness into a vehicle is not something that lends itself well to automation,” Marks said. “It requires a human brain and tactile feedback to know it’s in the right place and connected.”
- Q** Robot legs aren’t any better. In 1996, Manuela Veloso, an AI roboticist at Carnegie Mellon University in Pittsburgh, was part of a challenge to create robots that would play soccer better than humans. She was one of a group of researchers that year who created the RoboCup tournament to **spur** progress. Today RoboCup is a well-loved tradition for engineers on several continents, but no one, including Veloso, expects robots to play soccer better than humans anytime soon.
- R** “It’s crazy how sophisticated our bodies are as machines,” she said. “We’re very good at handling gravity, dealing with forces as we walk, being pushed and keeping our balance. It’s going to be many years before a bipedal¹⁰ robot can walk as well as a person.”
- S** Robots are not going to become artificial people that completely replace us. However, the workplace of the near future will likely be an ecosystem of humans and robots working together to **maximize** efficiency.
- T** According to Veloso, it is an **inevitable** fact that machines and artificial creatures will become a significant part of our daily lives. The time, she suggests, for us to start accepting them around us like a new species and learning to **relate to** them—the way we do with pets and other humans—is now.

Adapted from “The Robots Are Here,” by David Berreby: National Geographic Magazine, September 2020

David Berreby is a science writer whose works have appeared in *The New Yorker*, *The New York Times Magazine*, *National Geographic*, *Nature*, and many other publications.

⁸ Lean innovation refers to the process of getting customer feedback early in order to reduce inefficiency.

⁹ A bulldozer is a large machine often used in construction to move dirt and heavy items around.

¹⁰ A bipedal animal or robot is one that generally walks upright on two feet.

UNDERSTANDING THE READING

A UNDERSTAND THE MAIN IDEA Choose the main idea of the reading passage.

- a. Robots are a threat to people's jobs because they can do most things better and more consistently than people.
- b. Robots won't replace humans because they aren't as maneuverable and haven't yet mastered common sense.
- c. Robots will work closely together with human workers, who will continue to remain vital members of the workforce.

B UNDERSTAND MAIN IDEAS Match the paragraphs with their main ideas.

- | | |
|------------------------|--|
| 1. ____ Paragraph A | a. The robots of today are much better and safer to work with than older robots. |
| 2. ____ Paragraphs C–E | b. Corporations often prefer robots to people. |
| 3. ____ Paragraphs H–J | c. Robots are less capable than people in several ways. |
| 4. ____ Paragraphs K–L | d. Today, robots exist in the real world and do real jobs. |
| 5. ____ Paragraphs M–N | e. The idea of robots has been around for a long time. |
| 6. ____ Paragraphs O–R | f. Human workers appreciate the help robots provide. |

C UNDERSTAND DETAILS Read the sentences. Choose **T** for true, **F** for false, or **NG** for not given.

- | | | | |
|---|----------|----------|-----------|
| 1. The Caterpillar 336 excavator was operated by a person. | T | F | NG |
| 2. "Mute and brute" robots are designed to work closely with people. | T | F | NG |
| 3. Ready-Campbell's robots share a collective intelligence. | T | F | NG |
| 4. According to Derek Smith, workers usually don't mind robots taking away repetitive work from them. | T | F | NG |

D UNDERSTAND DETAILS Complete the sentences. Use no more than two words from the reading passage for each answer.

1. The robots of science fiction _____ and _____ like people.
2. Many of the industrial machines used today are _____ from humans to keep workers _____.
3. Newer robots are designed to _____ people who are unused to them.
4. Improvements in technology have allowed more _____ to be packed into _____ spaces.
5. Robots can do simple, repetitive work more _____ than humans, but humans can handle different, _____ tasks better.