

## READING PASSAGE 3

Answer **Questions 30-45**, which are based on Reading Passage 3 on pages 10 and 11.

### Is artificial intelligence a threat?

*Science correspondent Gary Marcus gives his views on whether we should be concerned about the future development of artificial intelligence*

If the latest reports are accurate, artificial intelligence (AI) is moving so fast it seems almost 'magical.' Self-driving cars have arrived; computers can listen to your voice and find the nearest movie theatre for you; there may soon be computers training medical students, and eventually helping diagnose patients. Scarcely a month goes by without the announcement of a new AI product or technique. Yet, it may be too soon to express such enthusiasm: we still haven't produced machines with common sense, natural language processing, or the ability to create other machines. Our efforts at directly simulating human brains remain primitive.

However, the only real difference between enthusiasts and sceptics is the time frame. The futurist and inventor Ray Kurzweil thinks true, human-level AI will arrive in less than two decades. I'd predict that it will be at least double that, given how the challenges in building AI, especially at the software level, are much greater than Kurzweil admits. But in the future, nobody will care about how long it took, only what happened next. It's likely that machines will be smarter than us at almost everything in a century from now. There might be a few jobs left for entertainers, writers, and other creative types, but computers will eventually be able to program themselves and reason in ways that we can only dimly imagine. And they will be able to do it every second of every day, without sleep or coffee breaks.

For many, this vision of the future is inspiring. Ray Kurzweil has written about the point when AI becomes more intelligent than humans and speculated that we may then replace our brains with computers and modify our bodies with robotic enhancements; scientist and entrepreneur Peter Diamandis has argued that advances in AI will bring in a new era of 'abundance,' with enough food, water, and consumer gadgets for all. However, even if you put aside the worries about what super-advanced AI might do to the labour market, there's another concern: that powerful AI might ultimately battle us for the control of resources. Most people dismiss such fears, believing them to be the result of the over-influence of science-fiction movies. To the extent that people plan for the medium-term future, they worry about asteroids, the decline of fossil fuels, and global warming, not robots taking over the world.

But a new book by writer and documentary filmmaker James Barrat argues we should be at least slightly worried. Barrat's core argument is that the drive for self-preservation and resource acquisition may be inherent in all goal-driven systems with a certain degree of intelligence. A purely rational artificial intelligence might expand 'its idea of self-preservation to include proactive attacks on future threats', including, presumably, people who might be unwilling to surrender their assets to the machine. Barrat worries that without precise and detailed instructions, AI might go to extremes we'd consider ridiculous to fulfil its goals, perhaps taking control of all the world's energy supplies in order to maximize whatever calculation it was interested in.

Of course, one could try to ban super-intelligent computers altogether. But the competitive advantage of every advance in automation is so strong that many share my suspicion that passing laws forbidding such things will guarantee that someone else develops the technology in secret or in another country.

If machines eventually overtake us, as virtually everyone in the AI field believes they will, the key question is about values: how we instil them in machines, and how we negotiate with machines if their values differ greatly from our own. Some argue it would be wrong to assume that a super-intelligent machine will share the values we typically associate with human beings, such as kindness and empathy. Research might one day show that constructing a super-intelligence that has certain of these attitudes is possible, but the replication of the full range of human attributes seems unlikely - it is certainly technically easier to build a machine that is solely concerned with numbers and data. The cyberneticist Kevin Warwick was also right to ask how we can understand AI when its 'thinking' will occur in dimensions humans cannot conceive of.

It is important to realize that the machines' objectives may well alter as they get smarter. Once computers can effectively reprogram themselves, and therefore constantly develop themselves, the risk of machines outwitting humans in battles for resources cannot be dismissed. AI entrepreneur Danny Hillis believes we are close to one of the greatest transitions in the history of biological evolution, and that we are not fully aware of the capabilities of what we are in the process of creating. Already, advances in AI have created risks that we never dreamt of. Thanks to the internet, a huge amount of data is being collected about us and being fed to algorithms to make predictions about our behaviour as consumers, for example. Worryingly, people don't always know what information is being gathered or even that it is accurate. Although this subject now sparks a great deal of argument and is a cause for concern, few people thought about it seriously until recently. So what other risks lie ahead? Nobody really knows.

**Questions 30 – 34**

Choose the correct letter, **A**, **B**, **C** or **D**.

Write the correct letter in boxes **30-34** on your answer sheet.

**30** What does the writer suggest about the excitement surrounding AI?

- A** It stems from assumptions that are premature.
- B** It may soon be replaced by widespread anxiety.
- C** It is the result of computers having unforeseen capabilities.
- D** It is unlikely to continue if the speed of change slows down.

**31** What does the writer say about Ray Kurzweil?

- A** He has revised his predictions about AI on reconsidering them.
- B** He has convinced people critical of AI to reconsider their views.
- C** He has underestimated the technical difficulties in developing AI.
- D** He has reassessed his view about the length of time AI takes to develop.

**32** The writer thinks that in a hundred years' time,

- A** even those in creative professions will be replaced by AI.
- B** people will have lost interest in trying to develop ever-better AI.
- C** AI will have capabilities which are almost impossible to predict.
- D** people will continue to be nervous about progress in AI development.

**33** What is the writer doing in the third paragraph?

- A** describing how AI will improve the quality of life in the future
- B** explaining why some experts' fears about AI currently seem unnecessary
- C** warning that a focus on AI distracts us from more important issues
- D** suggesting that the public do not consider conflict with AI a serious possibility

**34** Barrat takes the view that, in the future, AI will

- A** be increasingly unlikely to obey instructions.
- B** be incapable of setting realistic goals for itself.
- C** struggle to solve problems independently of humans.
- D** have a tendency to seek to gain control of resources.

### Questions 35 – 40

Do the following statements agree with the views of the writer in Reading Passage 3?

*In boxes 35-40 on your answer sheet, write*

<b>YES</b>	<i>if the statement agrees with the views of the writer</i>
<b>NO</b>	<i>if the statement contradicts the views of the writer</i>
<b>NOT GIVEN</b>	<i>if it is impossible to say what the writer thinks about this</i>

**35** There is almost complete agreement among AI experts about the potential of AI to outperform humans.

**36** Restricting the further development of super-intelligent computers is an idea that should be considered.

**37** Too little research has been done on how to give machines human values.

**38** It is reasonable to think that a super-intelligent machine could have the same characteristics as a human.

**39** Scientists should focus on constructing machines that process numbers and data in completely new ways.

**40** In the future, humans are unlikely to be able to comprehend the cognitive processes of AI.

### Questions 41 – 45

Complete the summary using the list of words, **A-I**, below.

Write the correct letter, **A-I**, in boxes **41-45** on your answer sheet.

#### Unknown dangers?

As artificial intelligence becomes more sophisticated, its **41** ..... are likely to change. When it reaches the point at which limitless **42** ..... is possible, it may start to challenge humans for resources. Humans may face a major turning point in their **43** ..... and have very little idea about the potential AI has, and so underestimate the risks. A useful comparison can be made with **44** ..... – when the internet was first launched, nobody thought this would become a **45** ..... . We therefore can't be sure what problems might lie ahead for us as AI continues to develop.

**A** data collection

**B** opportunities

**C** biological evolution

**D** technological challenge

**E** goals

**F** abilities

**G** self-improvement

**H** controversial issue

**I** scientific solution