

Name: _____ Class: _____

Are Humans Really Headed To Mars Anytime Soon?

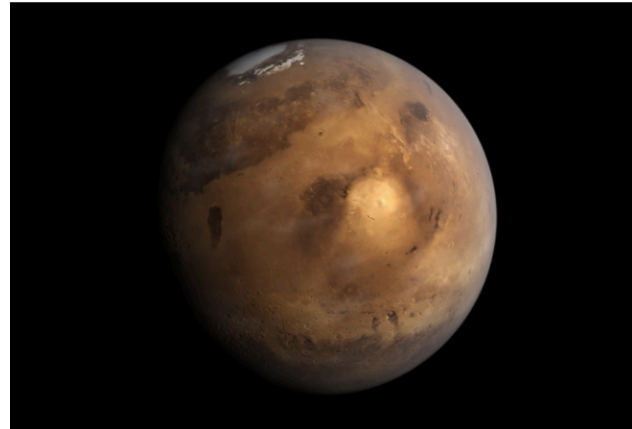
By Nell Greenfieldboyce
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Nell Greenfieldboyce is a NPR science correspondent; the following article comes from NPR's Morning Edition. Established in 1958, the National Aeronautics and Space Administration (NASA) is an independent agency of the United States federal government that is responsible for aeronautics and aerospace research. While NASA first successfully sent an unmanned spacecraft to Mars in 1976, humans have yet to land on Mars. Minimal federal funding have prompted private companies to take up the reigns and attempt to independently fund manned missions to Mars. As you read, identify the various points of view presented in the article about humans traveling to Mars.

[1] With recent news headlines proclaiming that dozens of people have been selected as finalists for a Martian astronaut corps,¹ it might seem like a trip to this alien world might finally be close at hand.

But let's have a little reality check. What are the chances that we really will see people on the Red Planet² in the next couple of decades?

Most people just don't get how hard this would be, says Mary Lynne Dittmar, an aerospace consultant in Washington, D.C. "The distances that are involved and the complexities that are involved in going and staying there are really enormous," she says.



"Mars" by Kevin Gill is licensed under CC BY-SA 2.0.

Dittmar ticks off a list of challenges: The trip will take more than half a year, one way, and you'll need to bring a bunch of food, plus oxygen. Then there's the question of whether you can even land on a planet with such a thin atmosphere. And if people do manage to make it to the surface, the first Martians will have to cope with everything from cancer-causing radiation to dust.

[5] "Mars has a big dust problem," Dittmar notes.

Still, a Dutch venture³ called Mars One has captured the public's imagination with its plan to colonize Mars by 2025. Bas Lansdorp, the group's CEO, says they've been featured in major media outlets like CNN and the *New York Times*. "We've been on NPR — I think twice already," Lansdorp says.

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1. a body of people engaged in a particular activity
 2. a nickname for Mars, owing to the planet's orange-red appearance in the sky, which is due to rust in the Martian rocks
 3. a business enterprise involving considerable risk

Lansdorp is a mechanical engineer by training who has worked on wind energy technology. His Mars dream started almost 20 years ago, when he was watching Dutch TV and was stunned by vivid images of the red Martian surface sent back by a NASA rover.⁴

“For some reason that I really cannot explain, I wanted to go to Mars and build a new human settlement there,” he says.

Lansdorp believes the voyage will likely pay for itself because it will be a media spectacle. Everyone in the world will want to watch the whole adventure, he says. Mars One is planning a reality TV show with sponsorships and advertising.

[10] “We expect it’s worth up to 10 Olympic Games’ [worth] of media revenue, which is \$45 billion,” says Lansdorp.

Of course, sponsors of the Olympics can be pretty confident that their games will happen. When asked how he responds to skeptics who say that Mars One is basically just a website and a marketing plan, Lansdorp says, “I think that the people who say that really haven’t paid attention to what we’ve achieved already.”

Lots of people applied to be part of the Mars One astronaut corps — paying a fee to do so. And the group has commissioned a couple of studies from established aerospace companies.

The Mars One plan calls for first sending out a small robotic lander in 2018. Lansdorp says he can do this more cheaply than NASA. But missions like that typically cost hundreds of millions of dollars. When told that it didn’t sound like he’d raised anything like that amount of money, Lansdorp replied that “we don’t need that kind of money yet because we’re not yet building the actual lander.”⁵ But these are the kinds of investments that we’re currently in negotiation for.”

How much has he raised? He won’t say.

[15] Some longtime space watchers say they seriously doubt whether Mars One has the right stuff. “I just don’t find it a credible⁶ proposition,” says John Logsdon, a space policy specialist and professor emeritus⁷ at George Washington University.

But that doesn’t mean he thinks the idea of going to Mars in the next couple of decades is a total fantasy.

“I would like to see, once again, people leave this planet and go someplace else,” says Logsdon. “Whether I’ll be around in the 2030s to see the first missions to Mars... I hope so.”

Getting humans to Mars in the 2030s is NASA’s stated goal. The trouble, Logsdon says, is that NASA can’t expect any big infusion⁸ of cash to get the job done.

4. a vehicle for driving over rough terrain, especially one driven by remote control over extraterrestrial terrain

5. a spacecraft designed to land on the surface of a planet or a moon

6. **Credible (adjective):** able to be believed; convincing

7. "Emeritus" is a term that describes a retired professor who still holds their title as an honor.

8. **Infusion (noun):** the introduction of a new element or quality into something

In his book *After Apollo?* Logsdon describes a serious proposal by NASA to push for Mars after the first moon landing.⁹ Under that plan, the first missions were scheduled for the 1980s. But President Richard Nixon¹⁰ didn't go for an expensive, Apollo-like program aimed at Mars, and no other administration has either.

- [20] That means that NASA will have to cobble together¹¹ the pieces of a Mars program on its current budget.

Last week, in Utah, the agency test-fired part of a new rocket that NASA says it will need to be able to go out into deep space — to the moon and beyond. The rocket's first flight (with no people on board) should come in 2018.

"We are developing many of the different systems to move from this low, Earth-orbit phase that we're in today with the space station, into deep space and onward toward Mars," says Jason Crusan, director for advanced exploration systems at NASA.

But that does not impress the president of the Mars Society. "The NASA humans-to-Mars program is all sizzle and no steak," says Robert Zubrin, an aerospace engineer who heads the society, which has long pushed for human missions.

NASA is building a big rocket and a little capsule, says Zubrin, but where's key stuff like the space habitation module that you'd need for any real, long-term mission? "There is no program," he says. "There isn't even a plan. There's just chatter."

- [25] So who's got the best shot at really making a Mars mission happen?

"No one can know the future," says Zubrin, "but I would say that the strongest initiative going on right now—the one that's making visible, dynamic progress — is the SpaceX initiative."

SpaceX is the first private company to have a robotic capsule actually dock with the international space station.¹² The firm currently delivers cargo for NASA, and may soon transport astronauts, too.

The founder of SpaceX is Elon Musk. Zubrin calls Musk "quite a person."

"He developed spacecraft for one-tenth the cost and one-third the time that NASA and the aerospace major companies have done," Zubrin points out.

- [30] Plus, everyone knows Musk is gung-ho¹³ for Mars. He makes no secret of the fact that he founded SpaceX to help make sure that life exists on more than one planet. Although, as he noted on Twitter last week, "The rumor that I'm building a spaceship to get back to my home planet Mars is totally untrue."

9. Apollo 11 was the first spaceflight that landed humans on the moon on July 20, 1969.

10. Former United States president Richard Nixon (1913-1994) was a Republican politician who became the only U.S. president ever to resign from office following the Watergate scandal, in which his administration attempted to cover-up its involvement in a break-in at the Democratic National Convention (DNC) headquarters.

11. To "cobble" something is to roughly assemble or put something together from available parts or elements.

12. The International Space Station is a permanently occupied outpost in outer space, which serves as a stepping-stone for further space exploration.

13. "Gung ho" describes someone who is unthinkingly eager or enthusiastic.

A search online instantly turns up videos of Musk talking about why we need to go to Mars: “I just think that a future where humanity is a spacefaring civilization and out there exploring the stars is an incredibly exciting future, and inspiring,” Musk told an interviewer for the website of the *Wall Street Journal* a few years ago, adding, “and so that’s what we’re trying to help make happen.” Space X, he predicted, will get people to Mars in 10 to 20 years.

Musk also announced, in another recent online discussion, that sometime in 2015 he hopes to unveil plans for the Mars Colonial Transporter, a plan for getting large numbers of people to the Red Planet.¹⁴

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14. On September 29, 2016, Musk announced plans for the redesigned Interplanetary Transport System, which will combine the most powerful rocket ever built with a spaceship designed to carry at least 100 people to Mars per flight.

Text-Dependent Questions

Directions: For the following questions, choose the best answer or respond in complete sentences.

1. PART A: Which of the following statements best identifies a central idea of the article? [RI.2]
 - A. The media attention on Mars enthusiasts has caused space exploration to become one of the most important issues facing Americans today.
 - B. While some private agencies are working on sending humans to Mars, many experts believe that the barriers to such a voyage still remain high.
 - C. Despite the publicity surrounding private space missions, NASA remains optimistic that it will be the first agency in the U.S. to send humans to Mars.
 - D. Private space agencies have no plans beyond landing on Mars, as opposed to the people of NASA, who genuinely want to colonize Mars and explore space.

2. PART B: Which quote from the text best supports the answer to Part A? [RI.1]
 - A. "With recent news headlines...it might seem like a trip to this alien world might finally be close at hand." (Paragraph 1)
 - B. "Most people just don't get how hard this would be....'the complexities that are involved in going and staying there are really enormous'" (Paragraph 3)
 - C. "The Mars One plan calls for first sending out a small robotic lander in 2018. Lansdorp says he can do this more cheaply than NASA." (Paragraph 13)
 - D. "'There is no program,' he says. 'There isn't even a plan. There's just chatter.'" (Paragraph 24)

3. How does Zubrin's description of NASA's Mars program as "all sizzle and no steak" (Paragraph 23) impact the meaning of the article? [RI.4]
 - A. It suggests that NASA does not have substantial plans for Mars, as opposed to the more purposeful plans of private space companies.
 - B. It suggests that NASA has the funding for a successfully manned mission to Mars but is using the funding improperly.
 - C. It suggests that NASA's announcement of its program to Mars was only meant to attract media attention for the space agency.
 - D. It suggests that NASA's program, while not likely to launch, will inspire other missions as a model program on how to get to Mars.

4. Which statement best describes how Zubrin might respond to the idea that sending humans to Mars is impossible? [RI.3]
 - A. He would disagree and point out that if NASA had the funding available today, the agency would be able to create human settlements on Mars by the 2030s.
 - B. He would agree and note that many public and private initiatives to send humans to Mars have already failed to succeed and will continue to fail.
 - C. He would disagree and acknowledge that while the project would be incredibly difficult, companies like SpaceX have already made considerable progress.
 - D. He would agree and add that none of these "programs" have any plans beyond how to get to Mars or any desire to live on it.

5. How does Greenfieldboyce seek to present both sides of the argument within the article? Cite evidence from the text in your response. [RI.6]

Discussion Questions

Directions: *Brainstorm your answers to the following questions in the space provided. Be prepared to share your original ideas in a class discussion.*

1. Based on the information presented in the text, what are the positives and negatives of going to Mars?
2. Do you believe it is worth spending public money to go to Mars? Why or why not?
3. Why do you think Zubrin describe's NASA's Mars exploration program as "all sizzle and no steak" (Paragraph 23)? What advantages might private programs have over programs that depend on the federal government for funding? What disadvantages might private programs experience?
4. Based on the information presented in the text and your own knowledge of efforts to explore space and other planets, do you believe humans will land on Mars in the near future? Are you more inclined to believe researchers or the executives of space-oriented companies?
5. Despite varying opinions about the feasibility of a trip to Mars, those cited in the text seem to unanimously agree that such a voyage would be a positive step forward for human society. In the context of this interview, what should the future look like? Cite evidence from this text, your own experience, and other literature, art, or history in your answer.