
ENGLISH LEARNING
FOR CURIOUS MINDS

Episode #178
The Space Race - Part Three | The New Space Race
23rd Jul, 2021

Alastair Budge: [00:00:00] Hello, hello hello, and welcome to English Learning for Curious Minds, by Leonardo English.

[00:00:12] The show where you can listen to fascinating stories, and learn weird and wonderful things about the world at the same time as improving your English.

[00:00:21] I'm Alastair Budge and today is Part 3 of our 3-part series on The Space Race.

[00:00:28] In Part One, we talked about how it started, and how the Soviets scored some early victories, putting the first satellite into space, the first animal into space, and then the first human into space.

[00:00:41] In Part Two, which was one of our member-only episodes, we talked about the second half of The Space Race, the race to put a man on the moon.

[00:00:51] And you don't have to have listened to that episode to know that the Americans won that particular battle.

[00:00:58] And in today's episode, Part Three, we are going to talk about what has been called The New Space Race.

[00:01:05] In this episode we'll cover what has happened since the end of the first Space Race, ask ourselves why people have started talking about a "new" Space Race, what is actually happening, why, and what might the future hold for space exploration.

[00:01:22] Before we get right into today's episode, I want to remind you that you can become a member of Leonardo English and follow along with the subtitles, the transcript and its key vocabulary over on the website, which is leonardoenglish.com.

[00:01:37] Membership of Leonardo English gives you access to all of our learning materials, all of our bonus episodes, such as Part Two of this mini series, as well as almost another 100 extra ones.

[00:01:49] Plus you'll get access to our awesome private community where we do live events, challenges, and much, much more.

[00:01:57] Our community now has members from over 50 countries, and it's my mission to make it the most interesting place for curious people like you to improve their English.

[00:02:08] So, if that is of interest - and I can't see a reason why it wouldn't be - then the place to go to is leonardoenglish.com.

[00:02:18] OK, let's get started, and talk about The New Space Race.

[00:02:23] Let's briefly remind ourselves where we left off in Part Two.

[00:02:28] On July 20th, 1969, the United States of America became the first country to put a man on the moon, when Neil Armstrong stepped out of the Apollo Lunar Module and **uttered**[1] the famous words "this is one small step for man, one giant **leap**[2] for mankind".

[00:02:48] Putting a man on the moon had been the big prize, and the Americans had **scooped**[3] it, they had won.

[00:02:55] After that, **enthusiasm**[4] for space exploration in America **dwindled**[5], it reduced significantly. Part of this was because the US government greatly **lowered**[6] the budget for NASA, it reduced the amount of money it **set aside**[7] for space exploration.

[00:03:14] Part of it was because there wasn't another **attainable**[8] big next step.

[00:03:20] Putting a man on Mars was too complicated, and Venus was impossible.

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[1] said

[2] a long jump forward

[3] won

[4] intense interest and enjoyment

[5] reduced

[6] decreased

[7] kept

[8] able to be achieved

[00:03:26] The moon had been the big one, and the Americans had already done it.

[00:03:31] It was also incredibly expensive. The cost of the Apollo programme, which was the **initiative**[9] to send an American to the moon, is estimated to be around $200 billion dollars in today's money.

[00:03:45] Space wasn't cheap.

[00:03:47] And on the other side of the Atlantic, or of the Pacific I guess, the USSR was starting to fall apart.

[00:03:55] It had lost the Space Race **at the final hurdle**[10], and although it did continue its space programme, it was **vastly**[11] reduced compared to the 1950s and 1960s.

[00:04:06] The **enthusiasm** for big, **ambitious**[12] space missions was not what it was, and no decade has been as **dominated**[13] by space exploration as the 1960s was.

[00:04:19] Indeed, there are only 12 people who have ever been to the moon, and two of them, Neil Armstrong and Buzz Aldrin were the first two people to do it.

[00:04:30] So, what has changed? Has anything changed?

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[9] new plan

[10] at the very end

[11] to a great degree

[12] difficult to achieve

[13] being of great importance

[00:04:34] Well, yes. A quick Google will **reveal**[14] hundreds of thousands of results for "The New Space Race", with videos and articles **proclaiming**[15] that we are either in the middle, or about to start, a similar Space Race again, but this time with more players, and much higher **stakes**[16].

[00:04:55] Indeed, it isn't just **sensationalist**[17] headlines, here's the former Vice President of the US, Mike Pence.

[00:05:02] **Mike Pence:** [00:05:02] And make no mistake about it. We are in a space race today. Just as we were in the 1960s. And the **stakes** are even higher.

[00:05:11] **Alastair Budge:** [00:05:11] So, what is actually happening?

[00:05:14] There is certainly much more interest in space exploration than there was 30 years ago, there is more investment in space exploration technology, there are more companies working on it, and there is more activity in space now than there ever was during the first Space Race.

[00:05:32] For starters, there are more countries that have taken an interest in space exploration.

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[14] show

[15] announcing officially

[16] possible risks and gains

[17] aiming only to draw attention and not to be accurate

[00:05:38] The USA and Russia are still two **dominant**[18] players in space exploration, but they have been joined by China.

[00:05:46] **To date**[19], up until now, only these three countries are capable of sending people to space.

[00:05:53] But, the number of countries that are able to send rockets into space, and therefore send objects such as satellites or probes to other planets, has dramatically increased, and there are currently 11 - alongside the US, Russia and China, we have France, Japan, the UK, India, Israel, Ukraine, Iran and North Korea.

[00:06:17] What the past 20 years has seen though, which has been a major difference between the first space race and now, is the **emergence**[20] of private space companies, companies that are building their own space exploration technology.

[00:06:32] Why this is important is that it no longer means that a country has to either build its own rocket technology or pay another country to allow it to take its astronauts, or other spacecraft, to space.

[00:06:45] Private companies, which have the objective of making a profit, will be happy to take these people, satellites, or anything else to space, for the right price, of course.

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[18] most important

[19] up until now

[20] appearance

[00:06:56] You have probably heard of some of these companies, but the **dominant** three are SpaceX, the company founded by Elon Musk, who is also the boss of Tesla and was a founder of Paypal.

[00:07:08] Then there is Virgin Galactic, which is **backed**[21] by Richard Branson, another billionaire and the founder of the Virgin group of companies. Technically Virgin Galactic is **focussing**[22] on sending spacecraft to the **edge**[23] of space, but it is still a dominant player.

[00:07:26] And the final one is Blue Origin, the space exploration company founded and financed by Jeff Bezos, the man behind Amazon.

[00:07:36] You can see the **theme**[24] here - you have to have a lot of money to start a space exploration company...

[00:07:43] Although space exploration is still not cheap, the arrival of these private companies has increased competition, meaning that the cost of getting to space is lower than ever before.

[00:07:56] Indeed, for the 30 years between 1970 and 2000 the cost per kilo of sending an object to space remained pretty constant, at around 18,500 dollars per dollars per

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[21] supported financially

[22] paying particular attention to

[23] outside limit, boundary

[24] idea, pattern

kilo. The American NASA space shuttles were even more expensive, at 54,500 dollars per kilo.

[00:08:19] Now, SpaceX has reduced that cost to under $3,000 per kilogram. Still not cheap, but it's 20 times cheaper than the space shuttle. It has done this mainly by developing **reusable**[25] rocket technology.

[00:08:36] You may have seen clips of the Falcon rocket, the SpaceX rocket, returning to Earth, where it can be **refurbished**[26], and then reused, which of course results in a large cost saving.

[00:08:49] These companies don't exist for the public good, of course. They exist to make money.

[00:08:54] As we've heard, Space exploration has historically been very expensive, and it was a **notoriously**[27] difficult industry for companies to make money in.

[00:09:05] But, the prize is so large, and investors think there is so much money to be made, that billions of dollars are **flooding**[28] into the **sector**[29].

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[25] able to be used again

[26] upgraded

[27] very well known

[28] arriving in large quantities

[29] area of interest

[00:09:15] The space industry is worth just under 500 billion dollars at the moment, and is predicted to triple to 1.4 trillion by the end of the decade, and to continue to rise after that.

[00:09:29] Why?

[00:09:30] Well, partly, given that it has become cheaper and cheaper to get to space, more countries are doing it.

[00:09:38] Faced also with a **finite**[30] amount of natural resources on Earth, there are those who believe that the solution to this is to take natural resources from outer space, and bring them back down to Earth.

[00:09:51] This is called space mining.

[00:09:54] There is the belief that a single football-pitch size **asteroid**[31] is going to contain as much as $50 billion worth of platinum.

[00:10:04] Of course, actually getting the platinum out of the **asteroid** and back to Earth is another question, but there is a growing belief that space does contain vast amounts of minerals that we need back on Earth.

[00:10:18] The money to be made in space isn't only going to come from what is found in space, though, but rather what putting objects in space enables us to do.

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[30] limited

[31] a rock travelling in space

[00:10:28] Specifically, satellites, and what they allow both us as individuals, and nation states, to achieve.

[00:10:36] On an individual level, we are all great **beneficiaries**[32] of a large satellite network.

[00:10:42] GPS, the Global Positioning System, which is made possible by only 24 satellites, means that you or I can turn on our phone and see where we are.

[00:10:54] When it comes to mobile phone reception, unless you have a satellite phone, you don't currently get mobile phone signal from space. If you live in a relatively urban area, this isn't a problem.

[00:11:06] But there are more than 2 billion people worldwide who don't have mobile phone coverage.

[00:11:13] There is evidently a huge amount of money to be made in connecting this unconnected population, and doing this from satellites in space is one particular popular option.

[00:11:26] And when it comes to countries, and national security, having a satellite network in space comes in pretty **handy**[33].

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[32] people who have advantages as a result of something else

[33] useful

[00:11:34] While there are plenty of **concerns**[34] about the right to **privacy**[35], being able to watch over your citizens from above is an attractive idea from a security **perspective**[36], especially for countries that aren't so **concerned**[37] about the **privacy** of their citizens.

[00:11:51] And the result of this is that there are more satellites than ever before, around 6,000 circling the Earth, of which only about 40% actually work.

[00:12:02] The rest? Well, they are either broken or are no longer in use.

[00:12:08] Bringing them down to Earth is expensive, and so they are just left up there.

[00:12:14] And while space is, to state the obvious, absolutely massive, there is a growing concern about the amount of rubbish that is up there, so called "space **junk**[38]".

[00:12:26] Because of the high cost and difficulty of bringing things back down to Earth, whether it is a broken satellite, a **misplaced**[39] screwdriver, or a fuel tank, there is a lot of stuff in space that has just been left there by humans.

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[34] worries

[35] the state in which one is not observed by other people

[36] point of view

[37] worried

[38] things that are no longer in use, rubbish

[39] lost

[00:12:43] NASA currently **tracks**[40] these.

[00:12:45] According to its website, there are approximately 23,000 pieces of debris larger than 30cm, half a million pieces larger than 1 centimetre in diameter, and approximately 100 million pieces larger than 1 centimetre in diameter.

[00:13:03] That's a lot of space **junk**.

[00:13:05] And it isn't just floating around **harmlessly**[41], given the **gravitational**[42] pull of the Earth, it is traveling incredibly fast, it's travelling at around 25,000 kilometres an hour.

[00:13:19] This means that even a very small object could do great damage to a spaceship or satellite. These objects are made to be light, so that they are easier to **launch**[43] into space, they aren't built to **withstand**[44] **collisions**[45] with other objects at 25,000 kilometres per hour.

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[40] notes the progress of, keeps an eye on

[41] in a way not likely to cause damage

[42] relating to the natural force of the earth that attracts other objects

[43] send

[44] remain undamaged by, resist

[45] accidents that happen when two objects hit each other

[00:13:39] So it is certainly a **growing**[46] **concern**[47], with no easy immediate solution.

[00:13:45] Another **element**[48] of space exploration that is also in need of a solution is the laws that apply to space.

[00:13:53] In 1967, 10 years after the first satellite was **launched**[49], the Outer Space Treaty was signed, which sets out the **principles**[50] of what you can and cannot do in space.

[00:14:05] It includes things like there should be no nuclear weapons in space, that the Moon should be used for peaceful purposes, and that space should be free for exploration by all states.

[00:14:17] But there are those who argue that it is now **out of date**[51], and **fails**[52] to **reflect**[53] the true nature of what mankind's **ambitions**[54] for space really are.

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[46] increasing

[47] worry

[48] part

[49] sent, set in motion

[50] basic rules

[51] no longer relevant

[52] doesn't succeed in

[53] represent

[54] strong wishes to achieve something

[00:14:29] For example, how would space mining work? Who would "own" a **settlement**[55] on the Moon, or Mars?

[00:14:37] There is a treaty relating to what you can and cannot do on the moon, called The Moon Treaty. It **specifies**[56] things like natural resources found on the moon should be shared by all of humanity, and you cannot own the Moon.

[00:14:52] But importantly it hasn't been signed by any countries that can actually go to the Moon, and most importantly it hasn't been signed by the three **dominant** players in space exploration - the US, Russia and China - so it's not really worth the paper it's written on.

[00:15:11] So, when it comes to the laws of space, there is still a lot to figure out.

[00:15:17] But it is a very exciting time, and if this next phase of space exploration is anything like the first Space Race, then it will result in huge technological **breakthroughs**[57] for us, back on Earth.

[00:15:31] Indeed, while one might look at space exploration and think "well, that doesn't apply to me, as I'm not too **keen**[58] on living on Mars", the exciting thing about space exploration is how it might make our lives, back on Earth, better.

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[55] a new region occupied by people

[56] explains in a clear way

[57] important developments and discoveries

[58] interested in

[00:15:46] Many of the technologies that came from the original Space Race were completely **unexpected**[59], from **baby milk formula**[60] to **memory foam**[61] for beds, and there will no doubt be discoveries that **vastly** improve our quality of life in this new space race.

[00:16:04] And one of the reasons that so many **commentators**[62] are so much more **optimistic**[63] about this "space race" than the previous one is that it is highly **collaborative**[64].

[00:16:14] Yes, there are still some **regional**[65] **rivalries**[66], and it is of course a matter of great **pride**[67] for a country to "own" a space discovery, or to be the first country to do

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[59] not expected

[60] a way of preparing milk for babies

[61] a material used in mattresses and designed to take the form of the body

[62] people who comment on the matter

[63] hopeful and confident about something

[64] involving many groups working together

[65] relating to a country's control over something

[66] competitions

[67] a feeling of pleasure and satisfaction that you get because your country has achieved something important

something in space, but this new **era**[68] of space exploration is the **polar opposite**[69] of The Space Race of the 1950s and 60s.

[00:16:36] While the USSR and the US were **fierce**[70] enemies, hiding their technological developments from one another and operating like space exploration was a **zero sum game**[71], the modern **era** is **dominated** by **collaboration**[72].

[00:16:52] After the NASA space shuttle programme ended in 2011, American astronauts were actually taken to space by Russian spaceships. This stopped in 2020, after SpaceX won the contract, but was a sign of how **collaborative** these two ex-enemies now were.

[00:17:11] In March of 2021 Russia and China signed a **memorandum of understanding**[73] to set up a Lunar Research Centre, a research centre on the moon, and they offered equal access to any nation that wants to participate.

[00:17:27] Now that it is no longer a public competition, and there is the spirit that space exploration is a benefit for mankind, and not the citizens of one particular country, the modern space **era** is **dominated** by **collaboration**, not competition.

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[68] period of time

[69] complete opposite

[70] extreme, intense

[71] a situation in which one's advantage is a disadvantage for the other

[72] working together for a particular purpose

[73] a document that describes the details of an agreement between two groups

[00:17:44] While one can only **hazard**[74] a guess about what might come next, it is hard to **deny**[75] that it is very, very exciting.

[00:17:54] OK then, that is it for today's episode on The New Space Race, and with that comes the end of this mini-series on The Space Race. I hope you enjoyed it, that you learned something new, and that it gave you a **renewed**[76] interest in what we can all see when we look up.

[00:18:11] As always, I would love to know what you thought of this episode. What are you most excited about for the future of space exploration?

[00:18:20] Do you even think it's exciting, or do you think we should **prioritise**[77] the planet we are on right now? I would love to know.

[00:18:27] For the members among you, you can head right into our community forum, which is at community.leonardoenglish.com and get chatting away to other curious minds.

[00:18:38] As a final reminder, if you enjoyed this episode, and you are wondering where to get all of our bonus episodes, including part two of this mini series, plus the

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[74] risk

[75] to say that it is not true

[76] happening again after a pause

[77] give more attention and importance to

transcripts, subtitles, and key vocabulary, then the place to go for that is leonardoenglish.com.

[00:18:55] I am on a mission to make Leonardo English the most interesting way of improving your English, and I would love for you to join me, and curious minds from 50 different countries, on that journey.

[00:19:08] The place you can go to for all of that is leonardoenglish.com. You've been listening to English Learning for Curious Minds, by Leonardo English.

[00:19:19] I'm Alastair Budge, you stay safe, and I'll catch you in the next episode.

[END OF EPISODE]

Key vocabulary

Word	Definition
Uttered	said
Leap	a long jump forward
Scooped	won
Enthusiasm	intense interest and enjoyment
Dwindled	reduced
Lowered	decreased
Set aside	kept
Attainable	able to be achieved
Initiative	new plan
At the final hurdle	at the very end
Vastly	to a great degree
Ambitious	difficult to achieve

Dominated	being of great importance
Reveal	show
Proclaiming	announcing officially
Stakes	possible risks and gains
Sensationalist	aiming only to draw attention and not to be accurate
Dominant	most important
To date	up until now
Emergence	appearance
Backed	supported financially
Focussing	paying particular attention to
Edge	outside limit, boundary
Theme	idea, pattern
Reusable	able to be used again
Refurbished	upgraded
Notoriously	very well known

Flooding	arriving in large quantities
Sector	area of interest
Finite	limited
Asteroid	a rock travelling in space
Beneficiaries	people who have advantages as a result of something else
Handy	useful
Concerns	worries
Privacy	the state in which one is not observed by other people
Perspective	point of view
Concerned	worried
Junk	things that are no longer in use, rubbish
Misplaced	lost
Tracks	notes the progress of, keeps an eye on
Harmlessly	in a way not likely to cause damage
Gravitational	relating to the natural force of the earth that attracts

	other objects
Launch	send
Withstand	remain undamaged by, resist
Collisions	accidents that happen when two objects hit each other
Growing	increasing
Concern	worry
Element	part
Launched	sent, set in motion
Principles	basic rules
Out of date	no longer relevant
Fails	doesn't succeed in
Reflect	represent
Ambitions	strong wishes to achieve something
Settlement	a new region occupied by people
Specifies	explains in a clear way

Breakthroughs	important developments and discoveries
Keen	interested in
Unexpected	not expected
Baby milk formula	a way of preparing milk for babies
Memory foam	a material used in mattresses and designed to take the form of the body
Commentators	people who comment on the matter
Optimistic	hopeful and confident about something
Collaborative	involving many groups working together
Regional	relating to a country's control over something
Rivalries	competitions
Pride	a feeling of pleasure and satisfaction that you get because your country has achieved something important
Era	period of time
Polar opposite	complete opposite

Fierce	extreme, intense
Zero sum game	a situation in which one's advantage is a disadvantage for the other
Collaboration	working together for a particular purpose
Memorandum of understanding	a document that describes the details of an agreement between two groups
Hazard	risk
Deny	to say that it is not true
Renewed	happening again after a pause
Prioritise	give more attention and importance to

We'd love to get your feedback on this episode.

What did you like? What could we do better?

What did you struggle to understand?

Let us know in the forum community.leonardoenglish.com