

[Transcript] The Daily / A New Race to the Moon

Hi, I'm Cardiff Garcia. I've spent years covering business and the economy as a journalist and a podcaster

And now I'm hosting a book club podcast called the next chapter by American Express business class
In each episode I sit down with a best-selling author whose insights help me see the world in a new and surprising way

It might even inspire you to take the next step in your career your business or just life in general
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You

From New York Times, I'm Michael Balbaro. This is a daily

Last week when India landed a spacecraft on the moon it revealed just how much the
International space race has changed

Today I speak with my colleague Kenneth Chang about why a new set of players is
Dominating that race and what is motivating their groundbreaking missions to the moon
It's Monday August 28th

Can I wonder if you can just describe the t-shirt you're wearing I

Just happened to be wearing my NASA t-shirt. It was from
2018 when they was the sixth anniversary of NASA

You just happened to be wearing that. Yeah

I wasn't even looking is it possible your NASA t-shirt is in very frequent circulation on your body. I
Probably should change more often. Yes

Can I want to start by asking you to describe this moment that unfolded out there in space last week
India had this robotic space probe in orbit around the moon and

Last week it took the momentous last step and tempting to land it on the moon near the South Pole
After arriving in lunar orbit is sort of been a slowly changing its orbit to get ready for this landing
and

On what was Wednesday morning for me it started firing its engines for the last time

At this point it's slowing down and falling to the moon. There's no turning back now

It either has to land or crash. There's no other choice. Hmm a very good evening to all of you

We at ISRO welcome you to the live coverage of India's prestigious

Chandra and three missions landing event on the lunar surface

So the Indian Space Agency is making this live stream broadcast of the landing

So we're seeing everyone in the control room the scientists here at his track are glued to their
systems

analyzing all sorts of complex data and

Like millions of people around the world

I was watching it on my computer and they were now saying each step along the way

Currently only two engines are now being fired that the engine are firing

We are nearly at zero velocity. It's velocity. It's descent rate

We were hovering and now we are approaching the moon surface. It continues to descend

We can see the Honorable Prime Minister Srinarendra Modi ji who is here to encourage us

Prime minister Modi of India pops up on the screen. He's in South Africa for a meeting

but he wants to be there at least virtually during this historic event and

We are approaching the vertical descent phase two which will it slows down

Didn't it stops for a moment at a this height of 150 meters

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Just for last-minute checks and it descends the remaining 150 meters
India is at the brink of creating history as we all await with bated breath to witness the landing on
moon's South Polar region
And
I
Also, there's cheering breaking out in the mission controlled
Modi's waving his Indian flag. Sir. We have achieved soft landing on the moon. India is on the moon
And it's one part pure exuberance and joy in one part
Really
India's successful moon mission
Is not just India's alarm
India was the first country to successfully land near the South Pole to moon
this success
belongs to all of humanity
And
Can this is clearly an accomplishment but with all due respect to India
This was a robotic
spacecraft
Landing on the moon 50 years after the United States did something arguably much harder
Which is put humans on the moon
So why is India even undertaking this mission now?
And why is it being treated as such a big moment?
So you're right. This is doesn't compare to what NASA did
During the space program when I was young
But it's a complete different space race now
Everyone including India wanted to go to the moon and they're going to a completely different part
of the moon
it's near the South Pole and that offers a whole new range of opportunities and
Scientific mysteries that no one has tried to answer yet
Explain why is this such a different kind of competition to get to the moon and a different set of
opportunities
so NASA wrapped up its Apollo moon landings in 1972 and
When amazing things they did was bring back rocks and dirt from the moon
And that's been a treasure trove for scientists to understand the history of the solar system
But after that people sort of felt you know the moon we've been there. We've done that
We've brought back the rocks and dirt. We've basically learned everything that we need to know
about the moon
And so NASA and planetary scientists want something new so they are looking toward Mars to
Venus
They sent the Voyager spacecraft that went past Jupiter and Saturn and produce all these amazing
new images of these new planets and
For decades people kind of just overlooked the moon
This is something that you looked up at night and perhaps notices some craters, but it had been
forgotten scientifically

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Mm-hmm, but this started to change in the mid-1990s
There were radar images taken and by the Arecibo radio telescope in Puerto Rico
They bounced radar signals off the moon and there are certain places particularly in the polar regions where
the reflection seemed particularly bright as if there was something shiny
Almost like ice at the bottom of its crater
But there was no way to tell from the radar
why these parts were so shiny and
This just continued as a mystery
Until there was one scientist named Alan Binder. He had this proposal for
Sending a dirt cheap spacecraft to the moon. It was the orbiter didn't land and it was called lunar prospector and
he had to fight the NASA leadership because
Like everyone else NASA was looking to do things farther out in the solar system the moon was still
been there done that
But Alan Binder finally won
Funding to do lunar prospector
It orbited the moon
And it was able to measure hydrogen
Large amounts of hydrogen in certain parts of the moon and
For the first time the pieces fit together these places
Corresponded to where the scientists had previously seen the shiny spots on the moon
And
Why is that important hydrogen the most likely form that this could be in was H₂O
water, which is two hydrogens and one oxygen and
Important as at the poles because it's colder at the north and south pole and
These spots look to be at the bottom of these deep craters
And the Sun never shines at the bottom of these craters
So these are literally some of the coldest places in the solar system a few degrees above absolute zero
So if ice ever formed in these craters, they would never have a chance to melt
And so the ice at the bottom of these craters
You can almost think of it as the freezer compartment the solar system
Where the layers are frost slowly layered on top of each other over four and a half billion years
Got it. So suddenly all these pieces that you say that are fitting together
the shiny
images the cold temperatures the hydrogen
Suggest that there might be water
ice water on
The moon and why would that be so important?
Because now this makes this place a much more appealing place to send astronauts
One there's new scientific mysteries to be discovered here
How did this ice get here what form is it in and to who water is a crucial resource for astronauts?
And water is really heavy so you don't want to be sending all of it from earth all the time

So if it's there at the moon already that makes
setting up a lunar base that much easier hmm and
You can do other things with work
You can split it apart into hydrogen oxygen the oxygen that's air for people to breathe and
The hydrogen you can use it as fuel for rockets or for fuel cells to power a lunar base
so suddenly in this discovery that there might be water on the moon you're saying
scientists researchers are
seeing the possibility of
Maybe living on the moon or having much longer stays on the moon because water would power all
the things
That would be there the machines the humans etc
Yes, if there's water in the polar regions of the moon it becomes much easier to set up a lunar base
there
You can think of
scientists
Setting up a cabin in the woods almost hmm. It probably wouldn't be continually occupied
But astronauts would come there periodically
they could have the air and the water from the resources on the moon and
They spend a couple of weeks taking up rocks doing some other studies and then going back home
It's not only makes it easier, but there's also new things that you can try to do on the moon that you
couldn't do otherwise
hmm, and
Then there were two missions in 2008 and 2009 that confirmed that there was indeed water ice and
not just hydrogen
on the moon
So I think I now understand what's going on here
This discovery of water opens up a whole new world of possibilities on the moon
Possibly have a colony fuel for space exploration water for the astronauts doing that exploring to
drink and live on the moon and
This is what sparks this new race to the moon you described at the beginning of our conversation
Yes, there's now definitely water ice on the moon and this creates new interest to go back to the
moon
But this time the cast of characters is different
It's not just the United States and NASA anymore
Everyone wants to go to the moon and a new space race to the moon also has implications for the
geopolitics back on earth
We'll be right back
So can tell us more about this new race to the moon and about the countries that are involved in it
and dominating it
Well, NASA is still a big player in this
The interest in the South Pole and the water led President George W. Bush to start a moon program
But the US has sort of been waffling President Obama canceled that moon program and
then President Trump started a new one called Artemis and
President Biden has continued that but all that waffling means NASA hasn't gotten back to the moon

yet

Meanwhile, Russia's space program has largely faded away and

This has opened the door to new players in this new moon race

That includes private companies and countries that in the past you wouldn't have thought of as powers in space

Well, tell me about those new powers

First and foremost, there's China

Well, China launched its first lunar rover this morning the unmanned spacecraft is on its way to the moon

So China has had this very steady program of

Exploration of the moon China became the first country to land a space probe on the moon in 37 years

And everyone wants to get to the South Pole with the water, but first everyone has to prove you can land on the moon at all

China's lunar rover has successfully landed on the far side of the moon and China has managed to do this three times in a row

China has landed a robot spacecraft on the moon

Now it's the third time China's landed a probe on the moon and it's now going to spend several days trying to scoop up around

Two kilograms of samples before heading back and there's only ones with a perfect record

They haven't landed on at the South Pole yet, but that's in their future plans

I'm curious what makes the Chinese so successful at this. It's why the advantage of not being a democracy

They don't change the destination or the budget because there's been an election

So China sets out this five-year space program and they fund it steadily

So they've done what they plan and they done it roughly when they said they're gonna do it

But as you said, they didn't make it to the South Pole where the water is. What about the other players now in this race?

So there was an Israeli nonprofit that tried to launch the moon in 2019

We seem to have a problem with our main engine. They unfortunately crashed

Earlier this year, there was a Japanese company called iSpace that attempted to land on the moon

We lost the communication we have to assume that we could not complete the landing on the lunar surface

They crashed hmm Russia

They were trying to revive their space program with their first lunar mission since 1976

Now Russia's first lunar mission in nearly 50 years has ended in failure after its spacecraft crashed into the moon

They crashed Wow, and then there's India

We're just awaiting for the updates from the mission control room. They tried first in 2019

India's attempt to make one giant leap ended at the final step of its unmanned mission to the moon. They crashed

And so this week was essentially a redo of what they attempted to do in 2019

And this time they were successful in landing near the South Pole

Ken why is it so hard

for all these
countries and companies to get to the South Pole of
The moon, I mean when I think back to the 50-year journey. We've been on since NASA landed on
the moon
It would seem like it shouldn't be that hard to get to any part of the moon
The magic word that people use these days is sustainable
So everyone wants to get to the moon
But they want to do it on a budget and that's been sort of the tricky balance
so in the 60s NASA spent billions of dollars for the moon landings and
If you spent that much money again
You would have a very very good chance of succeeding on landing on the moon
But all these new companies and these emerging space nations
They're trying to do it on a much cheaper price tag and that's sort of been a compromise of how
much technology
use how much testing you have and
They haven't been able to get that right on the first try right because it turns out it's pretty hard to
land on the moon on a
Shoestring which is pretty intuitive, but it sounds like it's been a very painful lesson for all of these
entities
Yes, it's also been painful watching them
So this clearly remains a very expensive and meaningful
Undertaking for anybody who wants to get to the moon
especially a country that has lots of competing interests to balance and that makes me wonder
what's really
motivating all these
companies and especially these new entrants China and India to devote the resources required
To do this and I understand that the promise of water on the moon service is very tantalizing
And I get that getting there first and discovering the water and harnessing it would be a real coup
But it's something else driving all of this
Yes, it's a huge moment of national pride when they succeed
And so for these countries, of course, they're not overtaking what NASA accomplished 50 years ago
But they're forging their own path that for them was not possible even 10 years ago
When India launched this latest mission to the moon
the school children watched the launch in school because it was like a national holiday almost and
China similarly is using its space program to
Basically, Trump it that it's now one of the major powers it uses it to try to attract
Cooperation with countries in Africa. It's saying come fly with us. We'll fly you to our space station
Right. What you're saying is it's not just a question of
Pride which sounds important and it sounds quite lovely
This is about a country's ability to project its strength on
the world stage and all the things that the projection of that strength might yield
Which is immeasurable
Indeed, that's what the space race of the 60s was and that's what the space race of the 2020s is
going to be

And can maybe this is a silly question, but
Why the moon? I mean, it is hugely expensive. The failure rate is very high
There are so many ways for a country to establish its place on the global stage and its prowess
relative to its
rivals ways that are cheaper and
with a higher rate of success
Yes, but part of what attracts people to the moon is that it isn't easy
We choose to go to the moon that goes back to the famous JFK speech
We choose to go to the moon in this decade and do the other things not because they are easy
But because they are hard that we do these things because they are difficult
and
the moon has always been this object of
Imagination for people you see it every night and
It's something that
Is big enough that you feel I can almost touch it, but it's so far away that actually getting there
always seemed impossible
And so do you have to say you're there is
Almost like saying I can do the impossible
Well Ken, thank you very much. We appreciate it. Thanks Michael
We'll do it back
Here's what else you need to know today on Sunday Russia officially confirmed the death of Yevgeny
Progosian the head of a Russian mercenary group who led a brief rebellion against the country's
military
It was widely presumed that Progosian was killed in a plane crash last week
But over the weekend genetic testing gave Russian officials final verification
While the cause of the crash remains unknown
Western officials suspect that it was likely the result of sabotage by the Kremlin
and
Over the weekend a white gunman carried out what police said was a racist shooting at a store in
Jacksonville, Florida
Killing three black people
Including two customers and an employee
Plainly put
This shooting was racially motivated and he hated black people
The gunman who described his racist motive in a set of manifestos used an AR-15 style rifle
Upon which he had drawn multiple swastikas and according to police during the shooting
He ordered several white customers out of the store
This is a dark day in Jacksonville's history and he lost a life is tragic
But the hate that motivated the shooter's killing spree adds an additional layer of heartbreak
Today's episode was produced by Claire Tennis Ketter, Sidney Harper,
Asda Chatharvedi, and Rob Zipko
It was edited by Michael Benoit with help from Patricia Willens
Contains original music by Marion Lozano, Dan Powell, and Chris Wood and was also engineered by
Chris Wood

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Our theme music is by Jim Brunberg and Van Landverk of Wonderly
That's it for the daily. I'm Michael Balbaro. See you tomorrow.