

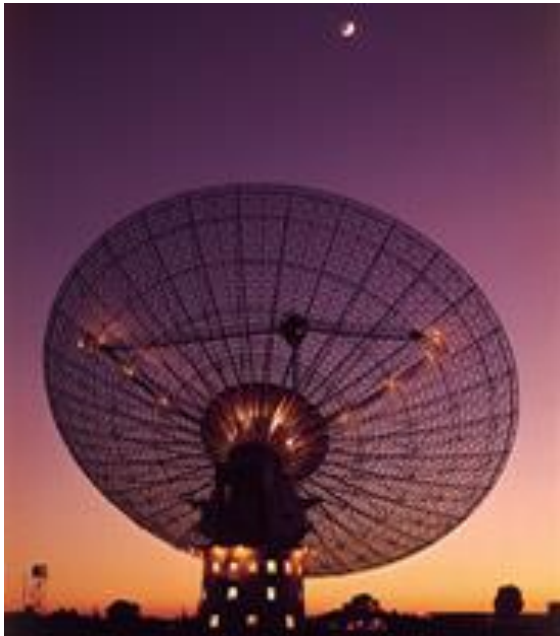
Apollo 11 and the first moonwalk: from the Parkes control room 21 July 1969

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The Moon Landing, 21 July 1969

- The Parkes Telescope brought images of the first Moon Landing to the waiting world on 21 July 1969.
- Originally, Parkes was backup for the Deep Space Network 64 m antenna at Tidbinbilla 500km to the south.
- It was not made clear to the world that Parkes was separate from the NASA infrastructure.



The 64-m reflecting telescope of the Australian National Radio Astronomy Observatory, sitting in the middle of a sheep paddock near the town of Parkes, NSW.

Best known as “Parkes” to scientists world-wide, or “The Dish” to the public after the popular (2000) spoof film of the same name.

On Location

- Parkes, New South Wales, 350 km west of Sydney
Pop ~8000; fertile agriculture hub (wheat, sheep).
- I spent much of 1967-1970 there as John Bolton's PhD student, living in the telescope quarters of the Parkes Telescope, CSIRO .

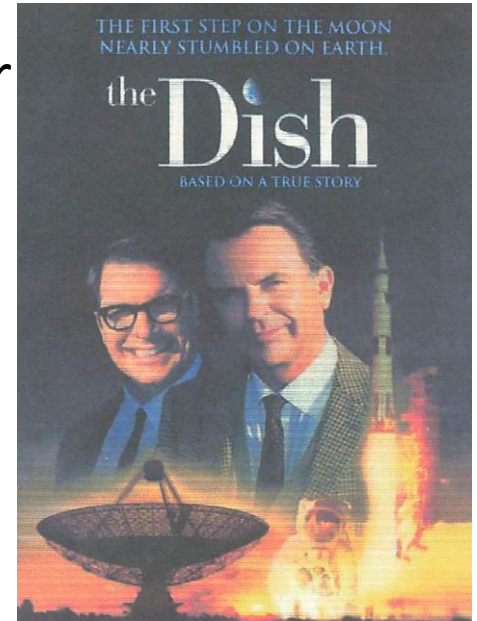
- Then Parkes became home town for four years (1970-1974) for me (postdoc now), Jenny and Kristina. We loved it.



Excellent school, lifelong friends. excellent food and sports facilities. We were very happy there, as happy as we've ever been.

The parody film "The Dish"

- If you saw the film 'The Dish', you might think you know the story. You don't. Three people to run the show?
- "Cliff" = John Bolton = Sam Neill, dish-master
"Glen" = JFW, PhD student
"Janine" = Jenny, my wife
Plus a sardonic technician
"Any resemblance to persons..."



- John Bolton's wife, Letty, was extremely annoyed about being left out of the film. In the film, she had died some time before. Jenny and I rang her on her 100th birthday.

Preparations

- John Bolton pored over the NASA flow charts. NASA crew were amazed to find someone present who knew the mission better than they did.
- e.g. John --- Should power fail, could we hand-crank the zenith and azimuth drive boxes at a rate to keep up with the spacecraft?

Here we are practicing.

‘We’ could just do it.



Preparations. II

We had a two-receiver system, with two primary-focus feeds, one on-axis, and the second, off-axis by just over one deg.

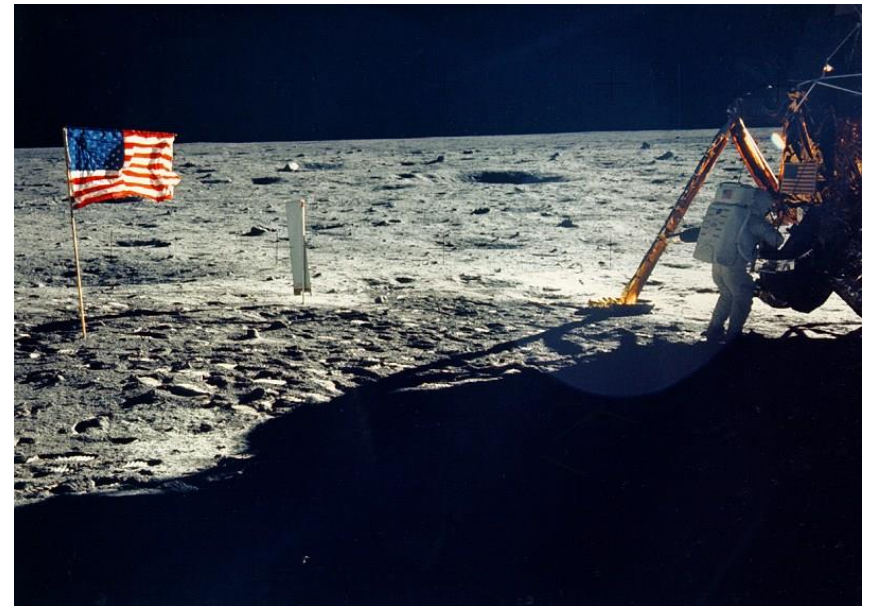
John's trickery was to line up the off-axis feed to acquire the TV transmission signal 5 min before schedule, a precious 5 min for Houston to evaluate picture quality.

The Walk: a strange sequence

- After the Eagle had landed, instructions to Armstrong were for 5 hours sleep before the Walk. **Silly idea.**
- He requested a “go” for the Walk immediately on landing; no way they could sleep.
- But then it took the 5 hours to don the spacesuits!

Not long before the TV transmission was due to begin, Houston chose Parkes as prime downlink station due to loss of signal at Tidbinbilla.

**And we saw pictures like this
→**



Control room during the Moonwalk 21 July 1969



John Bolton
PKS Director

JVW

John Shimmins
Dish expert

Taffy Bowen
Chief CSIRO-
Radiophysics



My assignment was so secret that
not even I knew what I was doing.

Astronaut heart rates

Aldrin (awaiting
descent): 81 bpm

Armstrong (stepping
onto Moon): 112 bpm

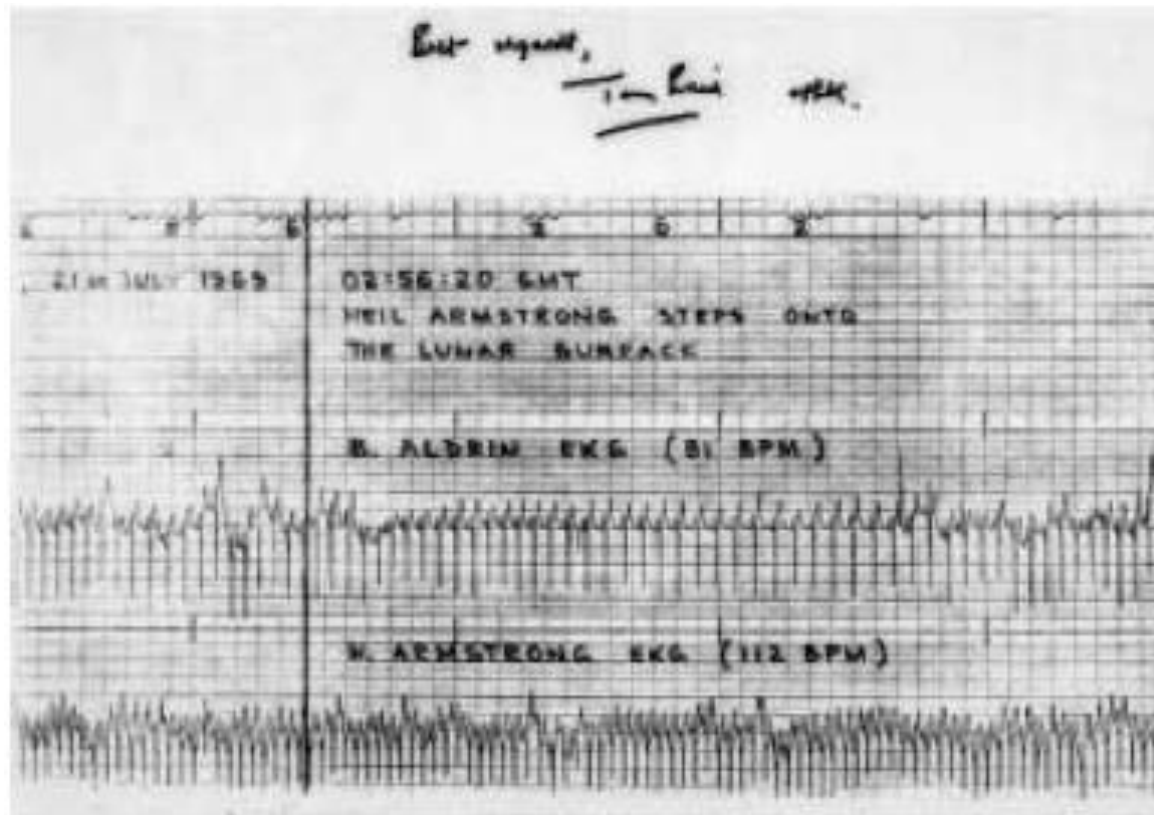


Figure 16 Armstrong's heart rate as he stepped onto the Moon. This was recorded at Honeysuckle Creek and sent to Parkes. It was signed by Tom Reid the Honeysuckle Creek station director, and the annotation is by Ed von Renouard (Photo: CSIRO).

The winter weather

Could it defeat us? Almost did.

It was stormy, that day of 21 July 1969, but generally calm in long interims.

However, weather systems kept coming down the line, and finally came the Big One.

Passage of the storm
with its gale-force winds.
Courtesy Dave Cooke



We made it through, but not by much:

Parkes Greatest Hit(s)

- The wind gust that hit us during the Apollo 11 moonwalk was the highest ever to hit the dish when in use. Not only in use but tipped well over....
- The gust rocked the dish onto the back face of the great zenith gear teeth with a deafening crash. And crash again on return to the front of the teeth.
- The tower shook like jelly.
- The tower was known to need strengthening.
- Bolton ran for the strain gauges plastering the walls. I thought he would evacuate us. I thought we were going down.

Zenith gear teeth



But keep calm and carry on

And so the hours passed...

- From what I could see of it, the rest of the mission went exactly according to plans. NASA was pleased with us:
"...pass on to the Parkes people that their labour was not in vain, they've given us the best TV yet."
 - NASA's Network Officer, Ernie Randall, during the Apollo 11 TV transmission
- As is well known, the astronauts returned safely to a heroes' welcome. In 2019 there was a world tour to celebrate the 50th anniversary of the event.
- 600 million people saw a better version of the event than I did.
- But I got my momento: classic **Fraunhofer fringes** from the emergence of Eagle from behind the Moon.

Fake it?

- There were and are many non-believers.
- Arguing with them is generally futile. Pick your battles. These are, in the main, conspiracy theorists.
- If there is any light in the eyes, you might remind them that more than 400,000 NASA employees were involved.
- If NASA was found to have faked it, the entirety of physical sciences in the USA would doubtless crumble. Surely that's an insurmountable risk for NASA – not just for NASA itself but for the structure of science.
- Or, consider the 400,000 NASA folk. Newspapers might pay \$50k or more for the story. You'd have to pay off all NASA and their families for at least 20 years. Do a simple sum: cost exceeds the GDP of the USA.
- **You still won't win the argument** – unless perhaps it's a bright young teenager who is wondering with an open mind. There you have a chance.



Epilogue

- Parkes got a NASA plaque.
- We got money, enough to resurface the Dish for observations at higher frequencies.
- We may not have got quite as much credit as was due; NASA likes to make it a NASA story. If it helps with funding, so much to the good.
- We got **The Dish!**
- It remains to marvel at the achievement with such primitive tooling. We must salute the courage of Armstrong, Aldrin and Collins.

However for the record, there is one group never mentioned, and for whom high praise is merited.

The engineers and technicians of the PMG, the **Post Master General's office, the Federal department looking after communications**, faced numerous unforeseen difficulties, and some had to work around the clock to ensure that the Australian cable hubs and network functioned correctly for the mission.

Failure on their part would have been disastrous in getting signal to Houston and hence to the waiting world.

ooOoo

Thank you