



# The real story

(notes by Jasper Wall)

5th December 2018

Cliff = John Bolton

Glen = JVW

Janine = Jenny

*“Any resemblance to persons living or dead ...”*

“Cliff Buxton” =  
John Bolton (1922-93)

Among many contributions to astronomy,  
he helped build the Parkes radio telescope

“The Dish” =  
Parkes Observatory

64-m diameter parabola, alt-az mount

Completed in 1961

Other Deep Space Network dishes copied its design

The land for Parkes was purchased from a sheep-farmer called Australia Helm in 1958



Glen = Jasper (more or less!)





Letty Bolton was extremely t'd off about being dead!  
A month ago Jenny and I rang her on her 100<sup>th</sup> birthday  
She is and was amazing: Parkes women's golf champion  
for years; the finest and most hospitable hostess ...

Dish staff about 30 in total

During the moonwalk, perhaps 20 on site

Note the quarters building never shown as it would detract from the myth of staffing of 3 or 4

Bolton was strict as to who could be in the control room on the day



# Parkes Mayor: Mayor Moon

Did like his beer

It was claimed that Parkes was the only town in Australia to have two “full Moons” on the same night every month



# Coordinate confusion

Houston *did* send the wrong coordinates, to me, when I was in charge of a session of monitoring the return of Apollo 14  
(3 missions later)

For that particular day (and it would be mine) they forgot to put the north/south parallax correction, amounting to nearly a degree between Houston and Parkes

There's no way that this could have been discovered beforehand by me or anyone

The only way to discover it was to find the spacecraft not there (see later)





# On Location

Parkes, New South Wales, 350-km west of Sydney

Pop ~9000; agriculture hub (wheat, sheep).

I spent much of 1967-1969 there as John Bolton's PhD student, living in the telescope quarters.

Then Parkes became home town for four years (1970-1974) for me, Jenny and Kristina

“On location”

“Parkes” town shots filmed in Forbes,  
sister town ~25 km away

Forbes had rather more picturesque  
Victorian/Edwardian facades



# Cricket in the Dish?

Yup, with a tennis ball

Also reading, sunbathing (in winter of course)



# Milk delivery

Electric milk float, no cart horses

- no “processed horse food” on roads
  - but quieter? **No!**

Local milkman was in training for rugby team,  
carried 6 bottles at a time in metal crate

Crashing sound as he ran woke us at 5am every morning



Janine = Jenny (more or less!)



# Love story?

Jenny and I were far ahead of  
the Janine–Glen plot line

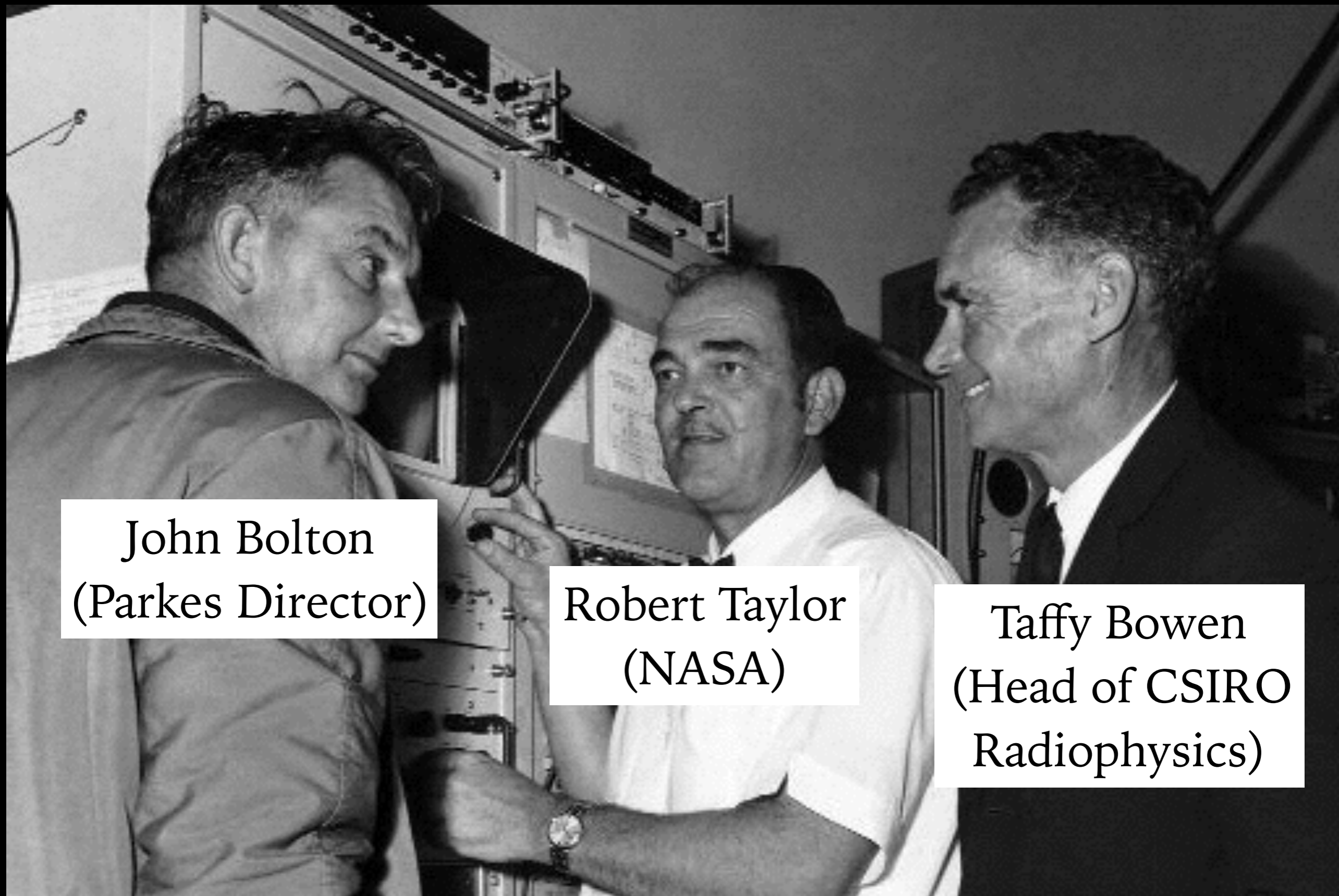
By July 1969 we'd been  
married for three months





# Parke statistics

Weight of dish:	300 tonnes
Weight of counterweights:	475 tonnes
Total weight of the dish:	1,000 tonnes
Surface area of reflecting mesh:	0.4 hectares (1 acre)
Height of concrete tower:	10.7 metres (35 ft)
Height to centre of dish:	27.4 metres (90 ft)
Height to top of aerial cabin:	58.6 metres (192 ft)
Power of Azimuth/Zenith drives:	11 kW (15 hp)
Pointing accuracy:	< 20 arcsec
Coverage:	Az 0-360 deg., El 30.5-88.5 deg.



John Bolton  
(Parkes Director)

Robert Taylor  
(NASA)

Taffy Bowen  
(Head of CSIRO  
Radiophysics)

Three principal players at Parkes during the Apollo 11 mission



# A number of real stories intertwined start here

During regular observing I did lose all power with the  
Dish tipped almost to its limit

It was about 3 am, dark quiet night. Everything slowly went darker in the control room, until pitch blackness and total silence. It happened so slowly that it was mesmerizing for both Kevin (dish operator) and me

Switchover to reserve fuel tank for the generator had not been set. With flashlights we figured it out and restarted the generator

To my utter amazement, everything – receiver, computers, telescope drive and control systems – restarted without a hitch, and we were back observing after 30 min



## “Loss” of spacecraft

I did not lose Apollo 14; I failed to acquire it. It was due to emerge from behind the Moon on its way home at 18:00. We were on the NASA coords by 18:05. No signal. Coords checked; Bill Butler was operator, one of the best

Rang John Bolton at his home to inform. He told me he'd think and ring back in 10 min

I instituted a  $2^\circ$  by  $2^\circ$  grid search, using NASA's erroneous coords as grid centre. Spacecraft found within 5 min, nearly  $1^\circ$  from NASA position – the parallax error. No misinformation was sent to NASA

John rang and I told him OK, we had it. His (unnecessary) suggestion? Get the moon's position from Almanac, search off the right limb. NASA chief glared at me stonefaced throughout





Bolton had insisted on a single-line contract with NASA:

“The Radiophysics Division would agree  
to support the Apollo 11 mission”



Actually the Moon wasn't full at the time  
– it was a waxing half-moon!



# The back road to the telescope

Drove it to and from telescope/home in Parkes  
most days/nights

More scenic than highway

Besides, with a bit of speed you could skid the corners,  
get the old car pretty well sideways on – lotta fun!



# Attendees

The decision to use Parkes as the prime station for the landing was made in real time. It was meant to be Tidbinbilla (the US NASA dish, 300 km south), but Tidbinbilla signal got lost

In fact Oz was not supposed to be involved in televising the first moonwalk at all

Instructions to Armstrong were for 5 hours sleep on landing, before the walk, but he requested a go upon landing – no way they could sleep!

As a result, neither the Prime Minister nor the American Ambassador came to Parkes

But the Prime Minister did love his whiskey  
(from a teapot or any which way)





# Parke's Greatest "Hits"

The wind gust at the moment of Apollo 11 signal acquisition was the highest ever to hit the dish when in use – not only in use but tipped to its 60° zenith limit

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 under engineering survey  
It was known to need strengthening  
Bolton ran for the strain gauges plastering the walls – I thought we were going down and he would evacuate us





# Control room during Armstrong's walk 21 July 1969



John Bolton  
PKS Director

JVW

John Shimmins  
Dish expert

Taffy Bowen  
Chief CSIRO  
Radiophysics



# Control room during Armstrong's walk 21 July 1969



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



Neil Armstrong's famous fluffed line:

“... one small step for [a] man ...”





The Parkes pictures were superior  
– but they weren't in fact broadcast live  
until after Armstrong's first steps –  
although they *were* used for the rest  
of the 2.5 hour Moon-walk



# Credits

I believe that the unsung hero of the hour was a grizzled veteran at a remote relay station of the PMG (Oz post-office)  
– their network was used to get the signal to Sydney  
and hence by cable to Houston

Houston first reported a black nonsense screen from Parkes  
– the vet looked at it, muttered “Bloody saturation”, flicked in  
10 or 100 db, flicked two more switches to invert the  
picture, and then left-right – “Perfect” shouted Houston

**That’s how Parkes became prime station for the moonwalk**  
– That together with Armstrong’s insomnia – he and Aldrin  
were supposed to sleep for 5 hours when they landed – they  
couldn’t – thus the moonwalk took place in the Parkes window,  
not in the Houston/Goldstone window

## The movie

“The Dish” was released at the 2000 T.I.F.F.,  
coming 2nd in the competition,  
behind “Crouching Tiger, Hidden Dragon”,  
and ahead of “Billy Elliot”

## Benefit for Parkes

The film producers paid for the privilege  
of location shooting at Parkes

This effectively funded a new  
visitor centre at the observatory





Rainbow over Parkes: John Sarkissian

