

Return to the Moon

A Study Day on **Friday 19th February 2027** at The Menuhin Hall, Stoke d'Abernon

Speaker – Professor Craig Underwood

This study day examines how, through the “Space Race” of the 1960s, we got to the Moon and what we learned in the process. In the '70s and '80s, the Moon gradually became a forgotten world until, in the '90s, a new generation of robotic spacecraft revealed the Moon to be more interesting than we had thought. The 21st century has seen the rise of new space powers and China is rapidly becoming a space superpower, while in the West, private enterprise has taken the lead. Detailed plans exist for humanity to go back to the Moon – this time to stay. Why should we go, and who will get there first?

Programme

- 9.30 Registration – Water available but not Coffee / Tea
- 10.00 **One Giant Leap – Project Apollo** – In 1961, President John F. Kennedy committed the USA to landing a man on the Moon and returning him safely to the Earth. NASA had only just managed to launch an astronaut on a ballistic flight barely entering space – how did they go from this to achieve Kennedy’s “impossible” challenge?
- 11.00 Coffee / Tea
- 11.30 **Apollo’s Legacy – Understanding Our Home** – Apollo was a technological triumph – but was it a scientific one? What did we learn about the Moon and, perhaps more importantly, what did we learn about our own place in the Universe? There were plans to extend human space exploration out to Mars and to establish bases on the Moon – why did we suddenly stop?
- 12.30 Lunch – Bring-Your-Own – Tea / Coffee available
- 1.30 **Robotic Revelations and Renewed Interest** – As digital technology advanced, robotic space probes got more sophisticated. The Moon was often used as a “test target” to confirm the operation of sensors as they passed by on their way to the planets. What they revealed was a shock – suddenly the Moon had become a much more interesting world.
- 2.30 Tea / Coffee
- 3.00 **Return to the Moon – Artemis and Living and Working off Earth** – Russia was not the space power it had once been – but other powers in Europe, and Asia began to catch-up with the Americans. A new “Space Race” has dawned – China vs. the US and the tech billionaires. Landing a human on the Moon has returned as an important political symbol; the Moon has also become a focus for exploitation.
- 4.00 Departure

To Book – Send the slip below by 16th February with a cheque for Member £12, Guest £15, Online £7, payable to Surrey u3a Network, to Denise Dobbs – u3a, 5 Aldridge Rise, New Malden KT3 5RJ, Phone 07964 798791. Enclose an SAE or an email address for confirmation. **Or make a bank transfer** to HSBC Account No. 11519018 Sort Code 40-27-07, Event Ref. Feb27, and send an email to surreyu3astudyday@outlook.com with the booking information below. **Or on day pay at door £15.**

MOON Member £12 Guest £15 At Door £15 Online £7 19th February 2027

Please Tick – Hall ☐ or View Online ☐; Email ☐ or SAE ☐; Cheque ☐ or BankTransfer ☐

Title First Name Surname Name of u3a

House Number/Name. Post Code Phone.

E-mail Address

If you need disabled parking, tick ☐ and give a car registration number

If you need a wheelchair space in the hall, tick ☐ or a step-free seat, tick ☐.

If you would like to receive details about future study days by email, please tick here ☐.

Synopsis

April 1961 was a pivotal month in the history of spaceflight. Soviet Cosmonaut Yuri Gagarin became the first man in space when he successfully orbited the Earth on April 12th. This was yet another blow to the nascent space programme of the USA and the newly formed civilian space organisation, NASA. The USSR had achieved the first artificial Earth satellite (*Sputnik 1*, October 4, 1957), the first living animal in orbit (the stray dog "*Laika*", *Sputnik 2*, November 3, 1957) and now the first human in space. The USSR appeared to be technologically in advance of the USA – could the US be losing the "Cold War"? Newly elected President of the United States, John F. Kennedy, faced this and other problems – not least the "Bay of Pigs" fiasco, which occurred in that same month. Kennedy needed a political diversion, and NASA needed a mission that they might stand some chance of achieving before the Soviets; there was only one left – to be the first to land a "man" on the Moon.

This was the genesis of Project Apollo. Kennedy had lain down this "impossible" challenge – and miraculously, NASA achieved it "*before the decade is out*" as Kennedy had specified. The Moon landings were thus more of a political project than a scientific one, however, good science was achieved – especially in the later missions – and we learned a lot about the nature of the Moon and how it came to be. We also learned that we ourselves live on "*Spaceship Earth*"!

In the next decades, the Moon was forgotten – "*been there, done that*" – and focus shifted to utility in space (applications satellites) and deep space exploration (robotic probes). However, in testing the instruments on such a probe, we got the first inkling that the Moon was a far more interesting world than the Apollo results suggested. The later '90s– early 2000s saw a fleet of "ice hunter" probes, which gave us a strong indication that there might be water (ice) at the Moon's poles.

In this period, Europe, Japan, India and China began to catch up with the US in terms of space capability. International missions confirmed that the Moon had water and therefore could become a practical outpost for humanity. It also had the rare resources we were becoming dependent on in our race to "net-zero".

Not surprisingly, the rising Asian superpower, China, which completely dominates the rare minerals needed for net-zero, embarked on a programme of similar audacity and timescale to Apollo. Could a Chinese Taikonaut be the next human to stand on the Moon? America sees the challenge, and has instigated Project Artemis, but NASA is not what it was, and it cannot land on the Moon without the aid of private enterprise in the form of the "tech billionaires" – and they are not necessarily motivated by science.

Biographical Information about our Speaker

Craig Underwood BSc (York), PGCE (York), PhD (Surrey), FBIS, MIEEE, MIAA, is Emeritus Professor of Spacecraft Engineering at the University of Surrey. He took his undergraduate degree in Physics with Computer Science at the University of York and went on to teach Physics at Scarborough Sixth-Form College, where he first became involved with Surrey's UoSAT satellites. In 1986, he joined Surrey as a research assistant and later as a senior engineer, academic lecturer and researcher, gaining his PhD in 1996.

Craig has over forty years' experience in space systems engineering and has worked on numerous small satellite missions, where he was initially responsible for mission analysis, ground-station development, thermal design and radiation effects analysis. Latterly, he specialised in power systems, sensors and instrumentation for radiation detection, optical and radar remote sensing.

He is author or co-author of more than 200 scientific papers and still teaches modules and short courses on Space Systems Engineering and Electrical Machines and Power Systems at the University of Surrey and has developed and taught many day schools on Earth Observation/Geoscience, Lunar and Planetary Exploration and Science, and aerospace topics at the Guildford Institute since his retirement.

Craig has been a Fellow of the British Interplanetary Society since 1987, and a full Member of the International Academy of Astronautics since 2020.



Study Days at the Menuhin Hall

Surrey Network Study Days – We welcome members and guests to our study days in the Menuhin Hall, while also making it possible to view the study days remotely. We are pleased that during term-time the Menuhin School has been offering short recitals by pupils in the lunch interval. Details available on the day.

Advertising & Booking – The practice of applying by post or by email continues, with booking responses being sent as members chose, while payment can be made by cheque or bank transfer. We advertise the study days with full details and booking forms on our website – [Surrey Network](#) and circulate the information electronically to all u3as in Surrey Network and surrounding areas. We also electronically circulate a poster suitable for advertising the future programme on display boards or websites.

Nut Allergies – The Menuhin School has pupils who have an allergic reaction to nuts and the staff have taken the decision to make the school and the Menuhin Hall a nut-free environment. Please ensure that your lunch does not contain any trace of nuts.

Disabled Parking – There are six spaces behind the hall and there are more in the main car park. If you have a blue badge and need level access to the hall, then tick Disabled Parking on the booking slip; you will then be allocated a space at the back of the hall and sent a permit. There is a drop-off space where disabled members have level access to the hall.

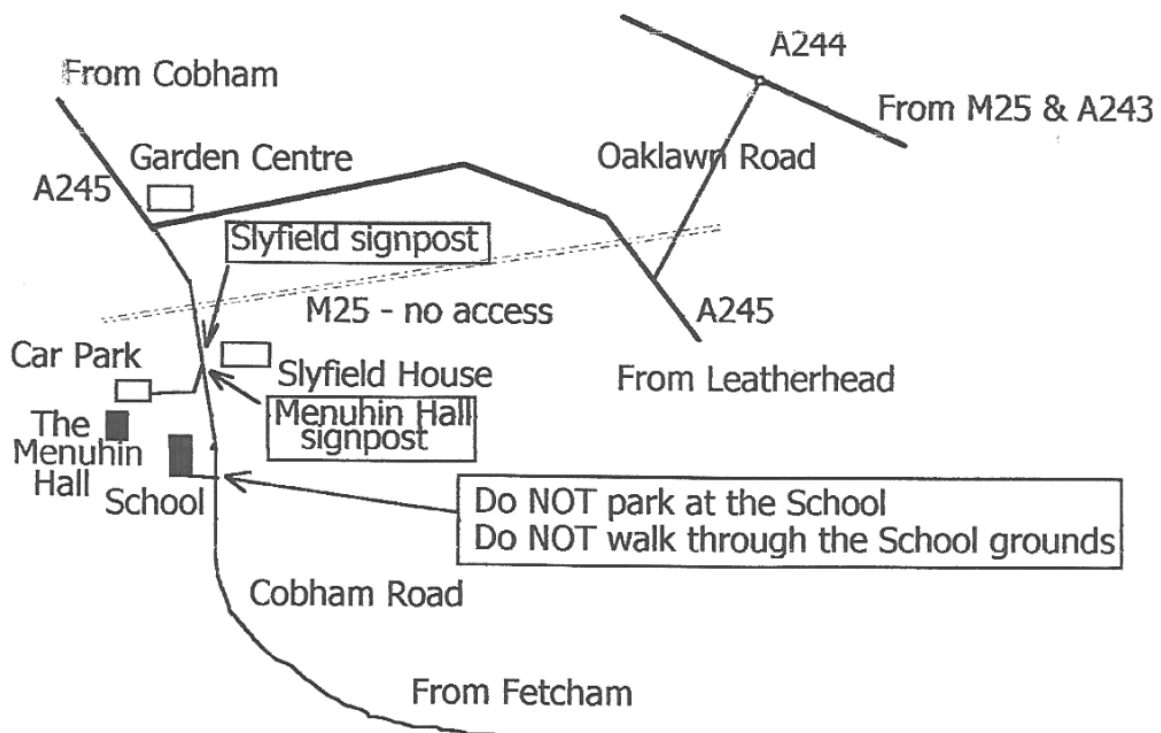
Wheelchair Spaces – If you need a seat removed in the hall to accommodate a wheelchair then tick Wheelchair on the booking slip.

Support for Network Committee – The study days have been running successfully for over twenty years. New volunteers with ideas for the future programme and the commitment to help run future study days will be made very welcome. Please contact Surrey Network Chairman, Mike Brigden, on 07766 331642 with offers of help.

Location & Contact Details for Study Day

The Menuhin Hall, Cobham Road, Stoke d'Abernon, Surrey KT11 3QQ

Telephone 07763 805046 (Emergency – On-Day-Only) or Menuhin Hall Office 08700 842020



The Menuhin School

The school was founded in 1963 in London and moved to its present site in 1964. It has around one hundred gifted pupils studying stringed instruments including piano and is financed, in part, by the DfE. Lord Menuhin was born in New York on 22nd April 1916 and died on 12th March 1999 in Berlin. His parents had come from Russia. His first public concert was in March 1924 and his first in Europe, was in Paris, in 1927. His performance of Elgar's Violin Concerto was recorded at the Abbey Road Studios in 1932. The Hall, designed by Mark Foley, was conceived as a memorial to Yehudi and was handed over to the school on 5th August 2005. The official opening was on 7th January 2006. Yehudi is buried by the stone pillar in front of the Hall. Nearby is an oak which he planted on his 80th birthday. The Hall was first used for a Surrey Network Study Day on 14th October 2005.

Recently a sister school, Yehudi Menuhin School Qingdao (YMSQ), was opened in China. The Yehudi Menuhin School has long held a close connection to China, dating back to the 1980s, when Yehudi Menuhin led the school orchestra on a tour to the country. The decision to establish YMS's first overseas branch in China was therefore driven by both a special emotional attachment to the country and a long-standing desire to contribute to the development of classical music education in the Far East. Partnering with the Qingdao Urban Construction Group, an organisation which demonstrated a common vision for music education, YMSQ was officially opened in September 2022. In time, the school is expected to grow to around 850 pupils, with first-study options covering the entire range of orchestral instruments. YMSQ is located in Qingdao, a beautiful coastal city in Shandong Province in North-East China.

Further Information Relating to Poster Below

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Image 1 – Artist's Impression of Artemis Base Camp – This file is in the public domain in the United States because it was solely created by NASA: https://www.nasa.gov/sites/default/files/atoms/files/artemis_plan-20200921.pdf.

Image 2 – Artemis II Recovery – NASA astronauts – Reid Wiseman, commander, left; Christina Koch, mission specialist, CSA (Canadian Space Agency) astronaut; Jeremy Hansen, mission specialist; and Victor Glover, Artemis II pilot, right – pose for a group photo on USS John P. Murtha, Saturday, April 11th 2026, in the Pacific Ocean off the coast of San Diego, California. The quartet splashed down Friday, April 10th at 5:07 p.m. PDT. Image Credit: NASA/Bill Ingalls.

Image 3 – Earthset captured through the Orion spacecraft window – During the Artemis II crew's flyby of the Moon. A muted blue Earth with bright white clouds sets behind the cratered lunar surface. The dark portion of Earth is experiencing nighttime. On Earth's day side, swirling clouds are visible over the Australia and Oceania region. In the foreground, Ohm crater has terraced edges and a flat floor interrupted by central peaks—formed when the surface rebounded upward during the impact that created the crater. The nearly 10-day journey took them 252,756 miles from home at their farthest distance from Earth. Image Credit: NASA – art002e009288 – at 6:41 p.m. EDT, April 6th 2026.

Surrey u3a Network Study Day



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**Presented by Professor Craig Underwood, University of Surrey
Surrey Satellite Technology Limited – 40+ Yrs of World-Leading Small Satellites
The Menuhin Hall, Stoke d'Abernon on Friday 19th February 2027
9.30am Registration for 10am Start**