APOLLOPALOOZA Younger Summer Camp (July 17, 2019)

Tom R. Chambers worked with students (8-12 years of age) as a part of the APOLLOPALOOZA event, Wings Over the Rockies Air and Space Museum (Denver, Colorado) to celebrate the 50th Anniversary of the Apollo 11 mission (1969-2019).

The results of the Younger Summer Camp follow:

1) **"MY EARTHRISE"**: LTP (Literacy Through Photography) activity. The iconic "Earthrise" photograph made by Lunar Module Pilot William Anders, Apollo 8 was projected, and his statement that he made about this image ... "We set out to explore the Moon and instead discovered the Earth." ... was mentioned. The students were asked to think about Anders' statement, and then focus/concentrate on the projected "Earthrise" photograph in order to write their feelings. They were encouraged to write as much as possible. Anders' photo follows, and the student writings follow the photo:

Student writings:

"I feel that the picture is beautiful. We went to the Moon to explore it, but we discovered the Earth. I think that means that you see Earth in a good way." NS

"Astronaut Anders took a famous picture called 'Earthrise'. I feel fascinated by how the Moon came into perfect orbit so that when we went to the Moon, we discovered the Earth. Neil Armstrong was the first person to step on the Moon, and Buzz Aldrin took a picture of his boot print on the Moon." IB

"I feel good about this picture because I think they did the Apollo missions to explore the Moon, not the Earth." JF

"Space is a place where wonderful things can happen, and I feel that Space has a lot of things in store for humanity. This picture shows how fragile Space actually is, and it is just amazing. One day, humanity shall discover new technology and Space equipment, and we will go farther and farther. Humanity is just at its beginning. One day, humanity will be friends, and discover new languages. This perspective is so amazing. It shows how much we have to explore. The universal 'Earthrise' is pretty." AM

"I feel wondrous and proud of the NASA journey. Earth looks like the Moon, but more colorful. It looks extraordinary." LS

"I feel very interested and amazed because they were the first people to orbit the Moon, and I think it is crazy that they were up there, and we were down here." RAW

"This picture makes me feel happy, intrigued, full of life, and interested. It feels different to look at the Earth instead of the Moon. I feel excited to know that we can go so far, exhilarated to know that I have a chance of doing this one day - to go out and explore the wonderful vacuum of Space." EJW

"As we were traveling to the Moon to explore the Moon, we discovered the Earth. This is because we saw the Earth from a higher height in Space. So in a way, we discovered the Earth. By seeing the Earth from Space, we were able to see things that you normally can't see. You can learn so much just from a different perspective. This gives you the feeling that there can be so much more out there, other planets, other places to live. It gives you a feeling of happiness and so much more. You also get to see the Earth from a different perspective other than the one you see everyday. You can be filled with so much emotion by a simple picture. This is what happens in this picture, 'Earthrise'." KAH

"Going to the Moon is a privilege for anybody. Nobody takes it for granted. When you go on a once in a lifetime experience like this, and you don't find what you came for, it can be disappointing. But when you think about it, you are just making yet another discovery. When you don't see anything beautiful, anything you came for, change your viewpoint, and make new discoveries. Change the world." MM

"I feel that in the 1960s, going to the Moon was an nonhuman experience. But in the future, humans may colonize the Moon, and put the original Lunar Modules in a museum. I suspect that in the future, humans may look back on the footage and Neil Armstrong's quote. One quote that I like is by Nelson Mandela: 'One is not born hating another person because of the color of his skin, background, and religion. People learn to hate, and if they can learn to hate, they can be taught to love. And love comes more naturally to the human heart than its opposite.'" MCD

"I feel amazed. It's like you are taking a walk on the Moon. You look up, and you see the Earth." ZS

"I feel very proud of Apollo 8 and NASA. This picture makes me feel happy for the astronaut who took it and happy for the USA. I am also happy that the USA won the Space race." AML

"I feel this picture is really, really cool. I feel this way because it is like the reverse of what we would do on Earth because the astronaut is taking the picture of Earth from the Moon. It also makes me feel proud because the first person around the Moon actually made it. So yeah, I feel proud for my species. Also, I think the Earth looks awesome, so thank you, NASA." VKM

"I feel good about this picture because it shows a different perspective of our world." MDP

"'We set out to explore the Moon, instead we discovered the Earth.' I feel amazed about this quote from Apollo 8, and the picture is amazing too. This picture was made by a man close to the Moon. The picture's name is 'Earthrise'." TWS

"I feel this picture's quote means that a person is exploring the Moon, but sees Earth with his eye. The picture is cool because it's half Earth and half Moon." AS

"I feel the Earth. I feel the Moon. I feel the Sun. I feel everything." BMS

"I feel like Space is a deep void of nothing. We set out in Space to explore more than our world. We explored the Moon and other planets. We have seen more molecular states, different states of matter - periodic elements." RTN

"He discovered what the Earth looks like from the outside." KLJ

"I feel inspired by this picture because we didn't know what the Earth looked like before it was taken. It was taken near the Moon's surface. It is 'Earthrise'." SEL

"I feel good because now I know what I am living on, and I like the quote, 'We set out to explore the Moon, but instead discovered the Earth.' William Anders has shown everybody what he actually discovered and what everybody is living on. I am very amazed that people can now go to Mars, the Moon and maybe Jupiter. Now we can see what and where everything is in the Solar System and what it is made of. And we are still making more tech to go farther and see what more there is. We are calculating to see if there are more stars like the Sun and planets that are orbiting. Mars has moons. That is crazy, and I am very proud of what we are doing. It will all be awesome to me, no matter what." KD

"'Earthrise' is a beautiful picture from Apollo 8. It looks a lot like freedom. I see that we live a little free. We are in the right place. From Earth, we see the Moon, but on the Moon, we see the Earth. Isn't that amazing? The Moon is just like the Earth in some ways and different in others." CB

"I feel happy to see this picture because other people who are not a part of this Space camp can't see it." KD

"The Earth is beautiful. The quote, 'We went to explore the Moon, but discovered the Earth.' doesn't make sense, so I am confused." JLV

"I think the Earth looks different than on the Earth. I feel different because there is more black than color." MHH

"I feel good about this picture because on Apollo 8 the astronaut said, 'We set out to explore the Moon and instead discovered the Earth.' We have found a way to go to other places outside of Earth. It is cool that astronauts can see us from the Moon, and we can see the Moon from Earth." CCR

"I feel that the picture is one of a kind. The picture is awesome like a rocket blasting off to Mars or another galaxy. The point of life is to live a good life and do what you want. If you want to go to the Moon, go to the Moon!" TC

2) **"MY AND ARMSTRONG'S FIRST STEP"**: A short Apollo 11 PowerPoint presentation that included a video of Armstrong stepping off the Lunar Module and making his famous statement ... "That's one small step for [a] man, one giant leap for mankind." ... was shown, and then WavePad was brought up to play/show Armstrong's statement (voice wave). The students vocalized/practiced the statement together, and then each student came up and recorded his/her voice making the statement. The recording was saved/shown, and then compared to Armstrong's voice wave as an artistic representation of sound (sound wave).

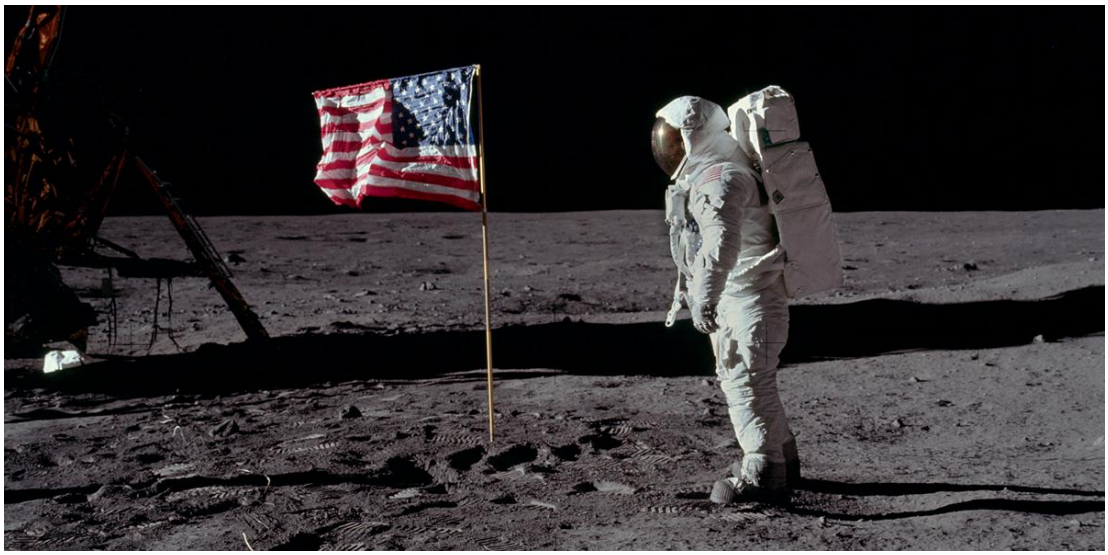
Links to all student recordings:

https://soundcloud.com/tom-r-chambers/sets/apollopalooza-younger-summer-camp-july-17-2019

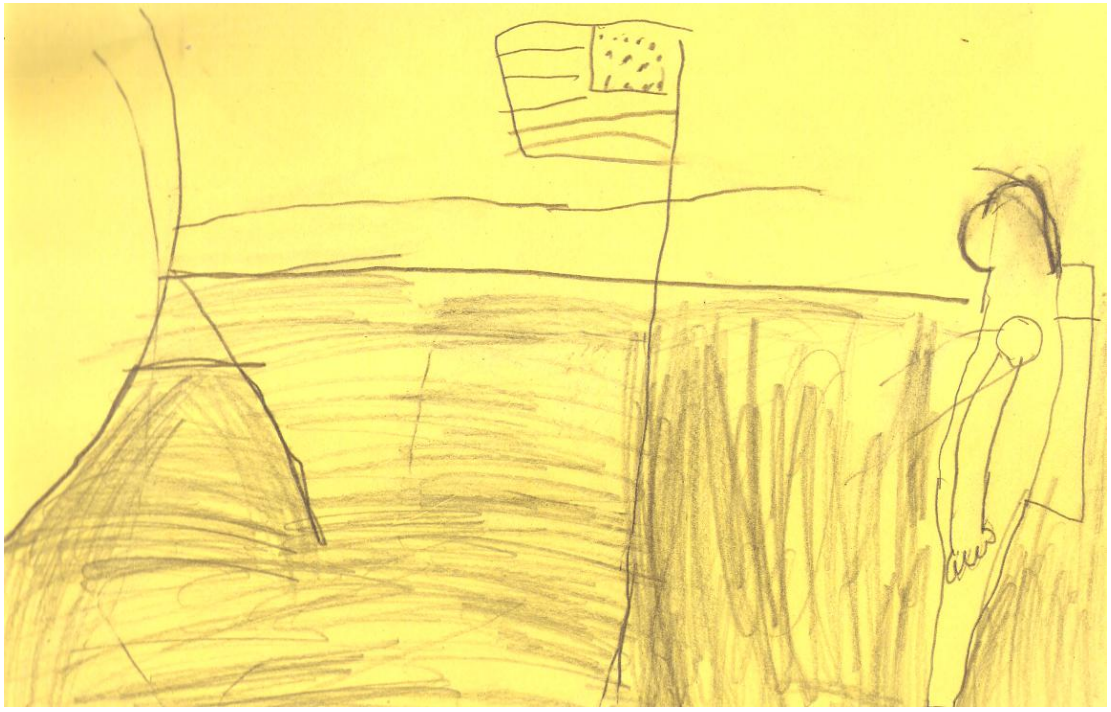
https://soundcloud.com/tom-r-chambers/sets/student-neil-armstrong-one-step-superimpositions

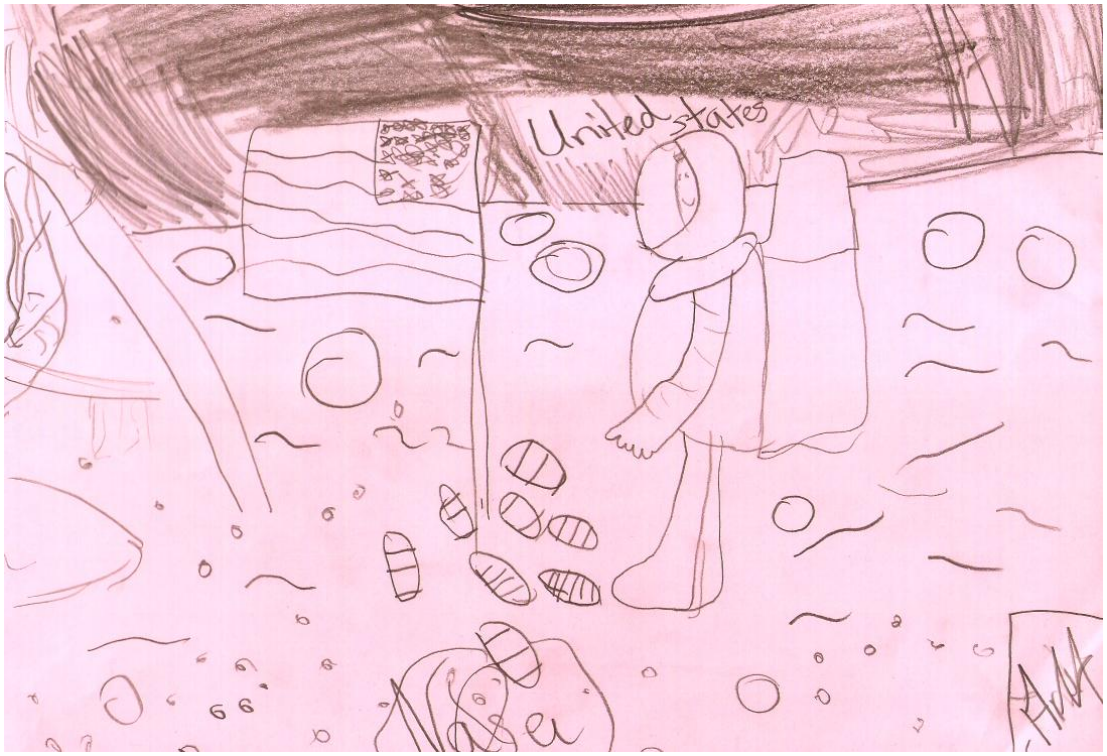
3) **"MY APOLLO 11"**: An iconic Apollo 11 image (AS11-40-5875) was projected, and the students were asked to draw/interpret the image via Crayons/pencils on an art pad. As the students drew/made their renditions, I talked about Arts interpretation as it relates to emotions and learning. I stressed online representation as a continuation of the process … a showcasing of their art work for public consumption (empowerment and relevance).

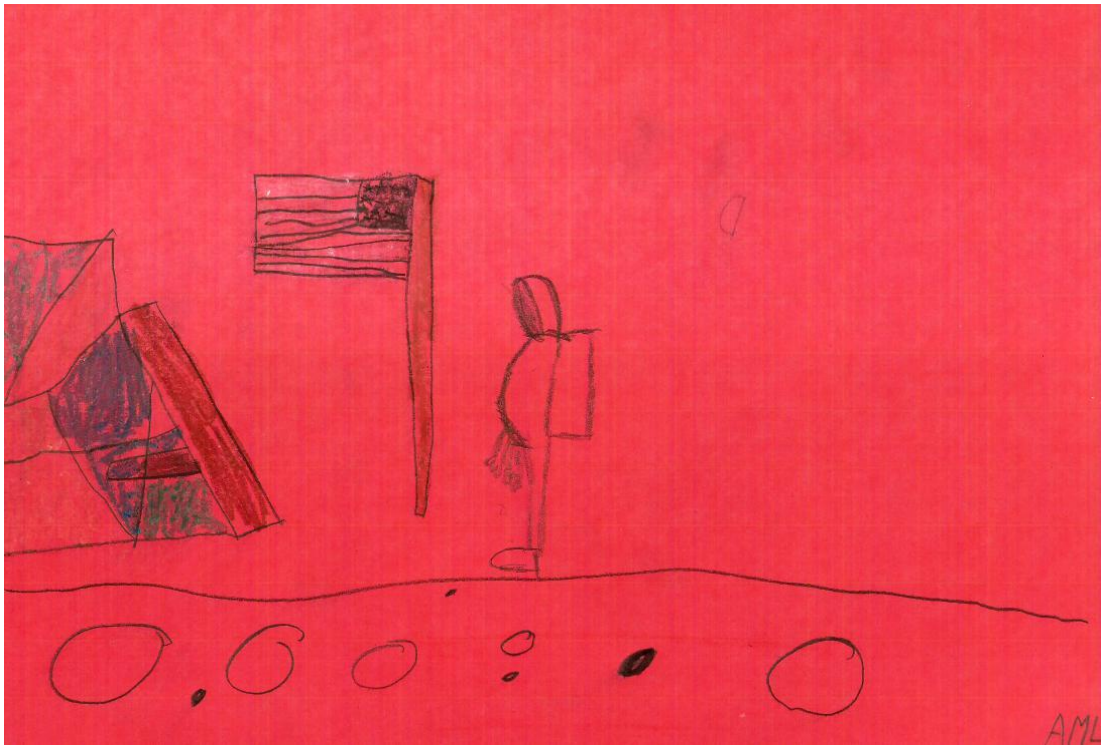
Commander Neil Armstrong made this photo of Lunar Module Pilot Buzz Aldrin standing near the American flag (AS11-40-5875):



Student art:

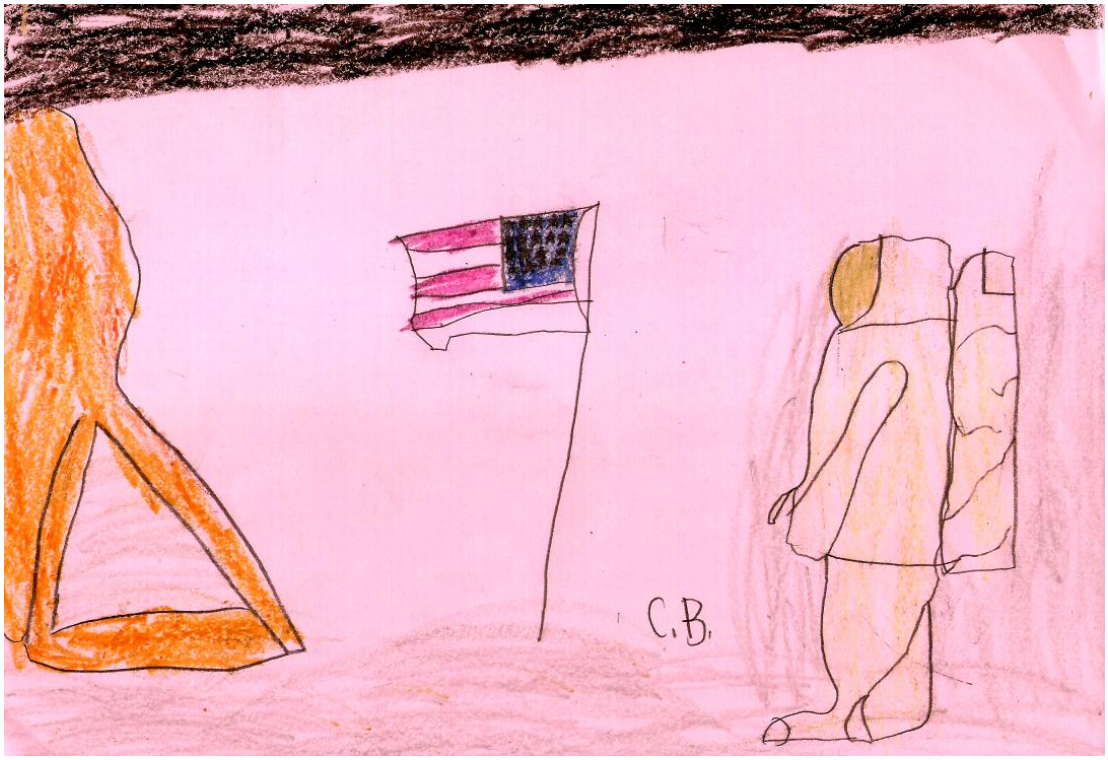


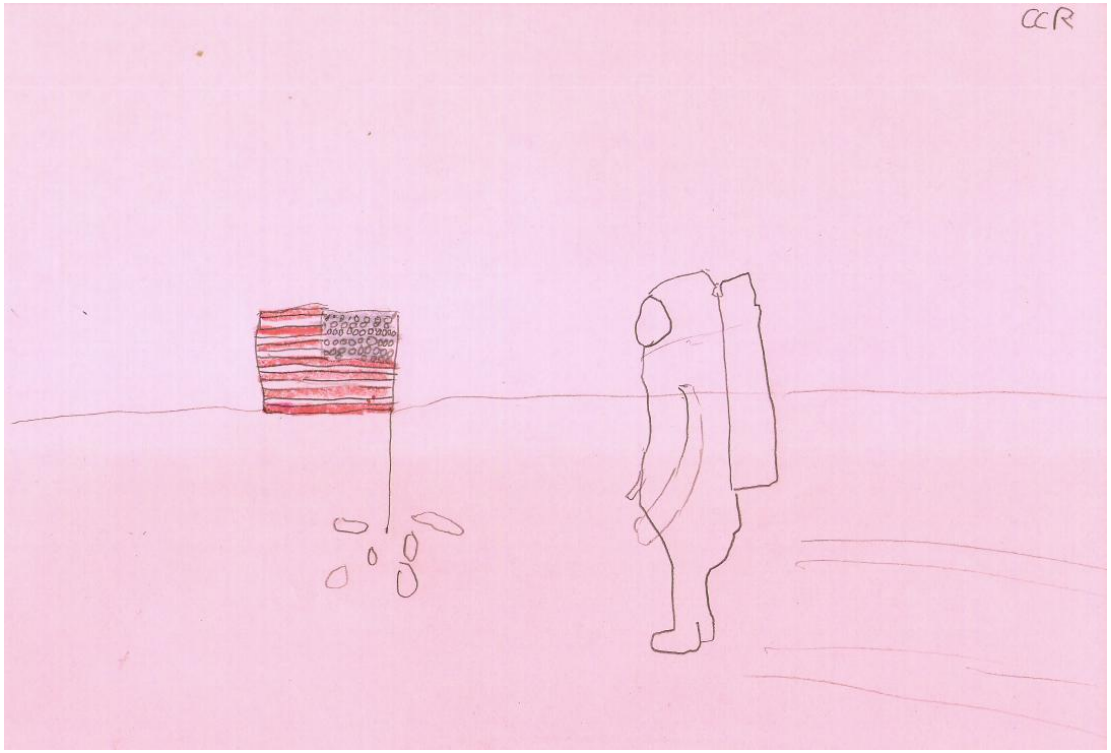

United states


AML

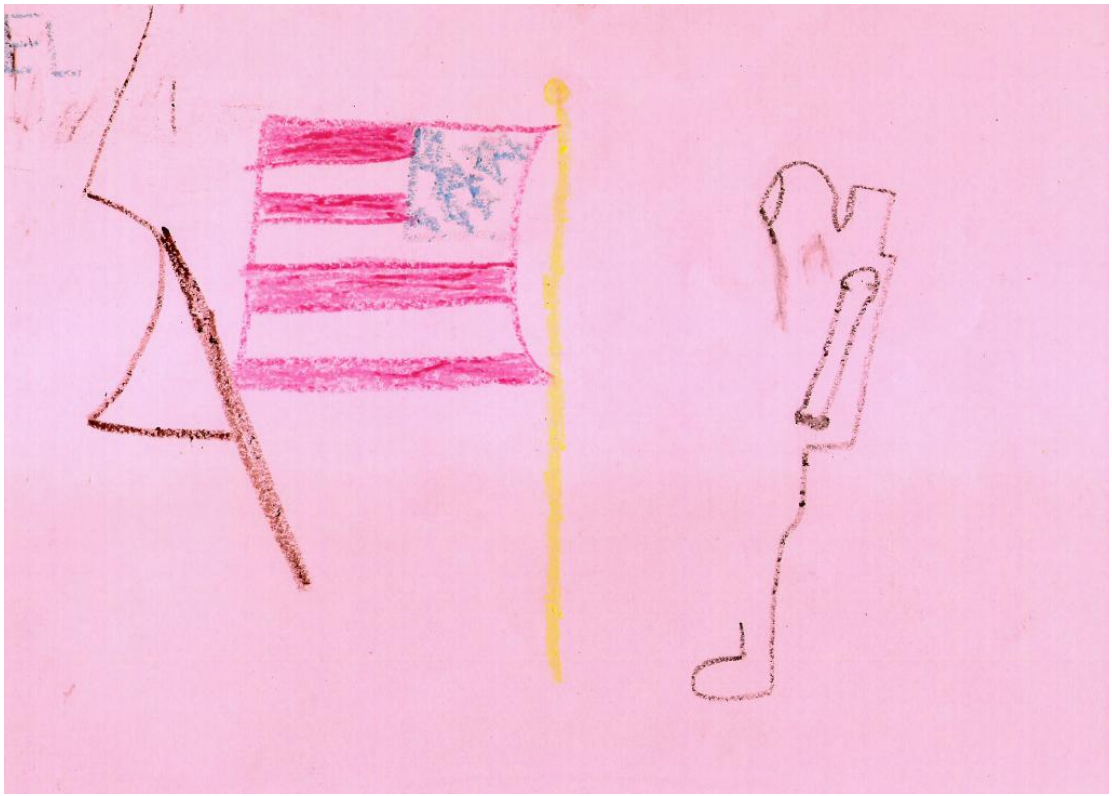

A.S.

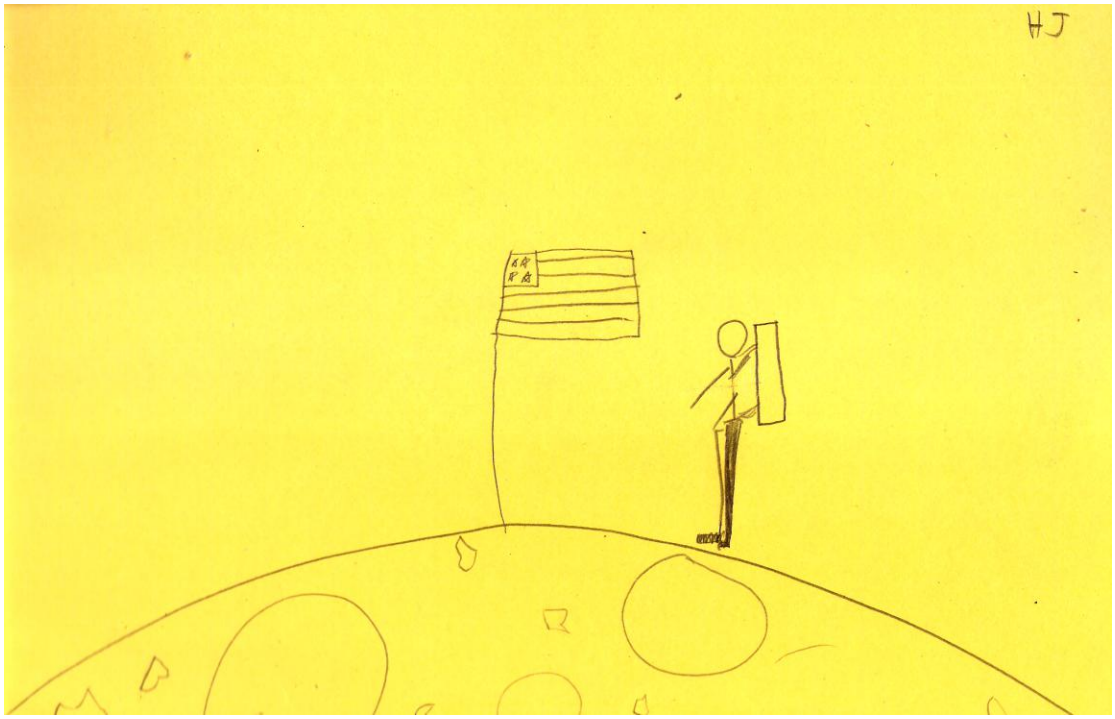

That's 1 small
step for man, ccKR..
andone giant
leap for
mankind

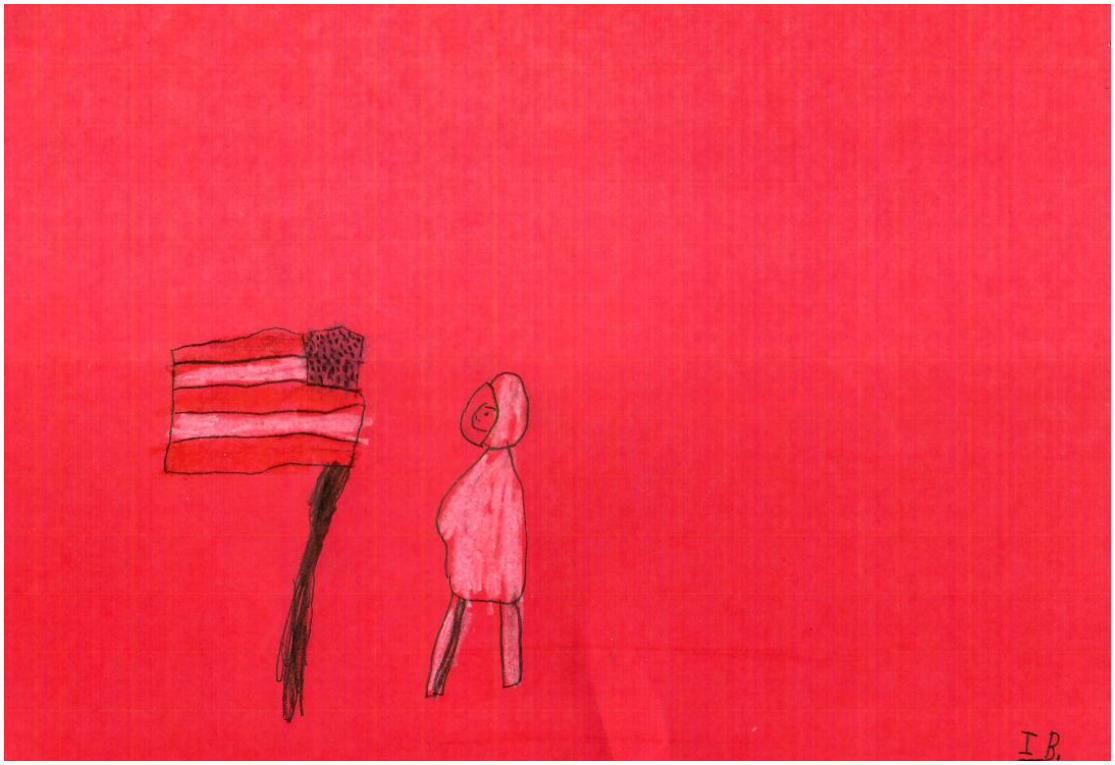

C.B.

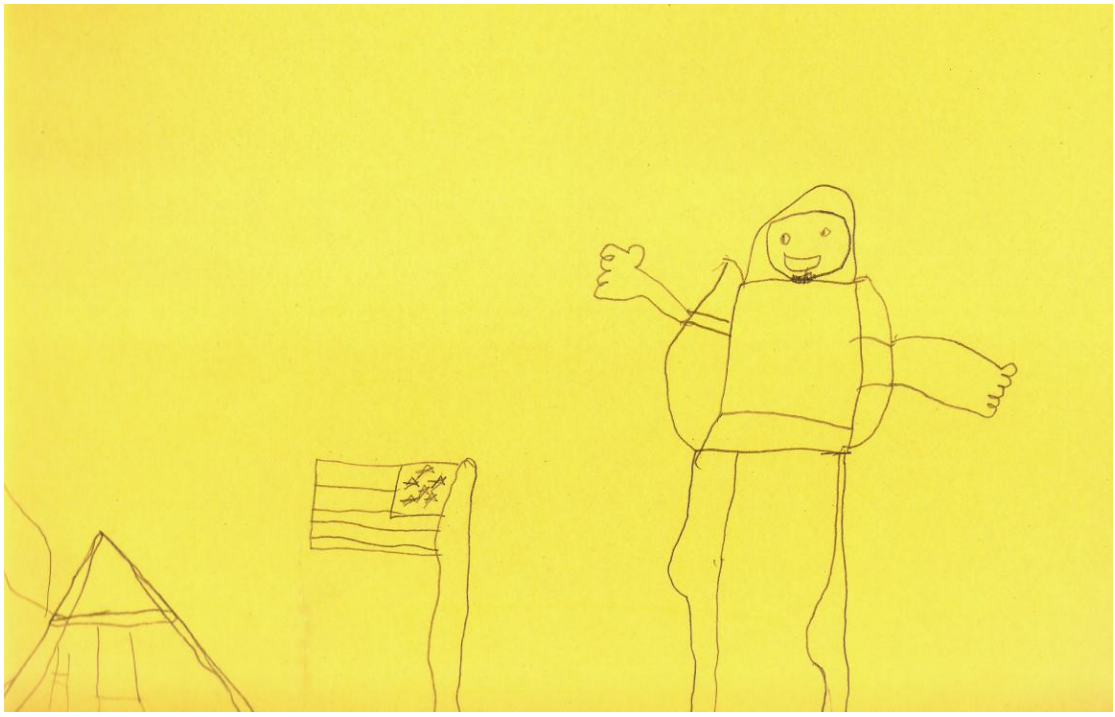

CCR

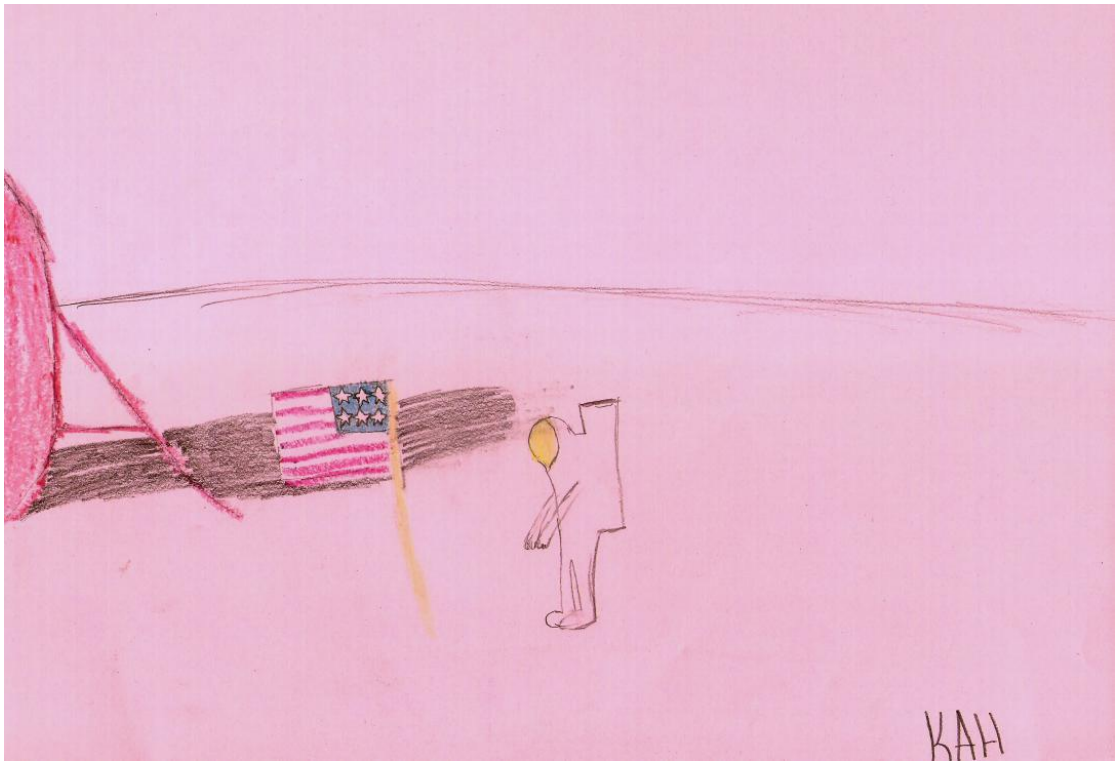

EJW

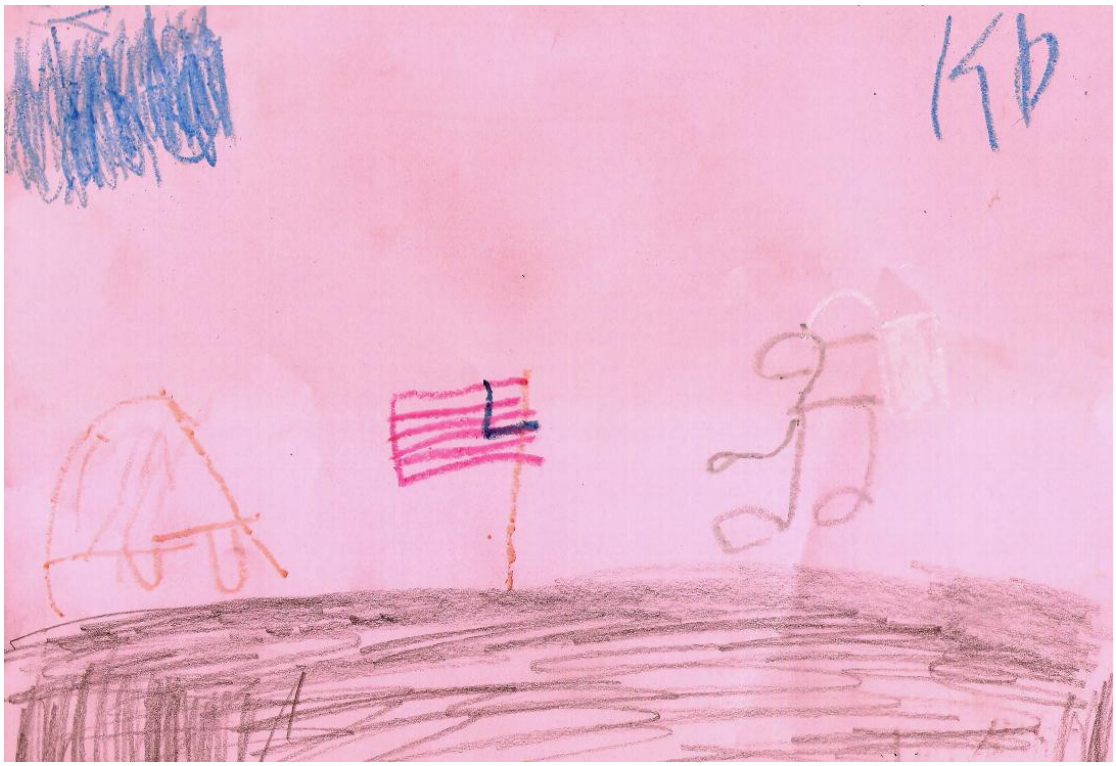


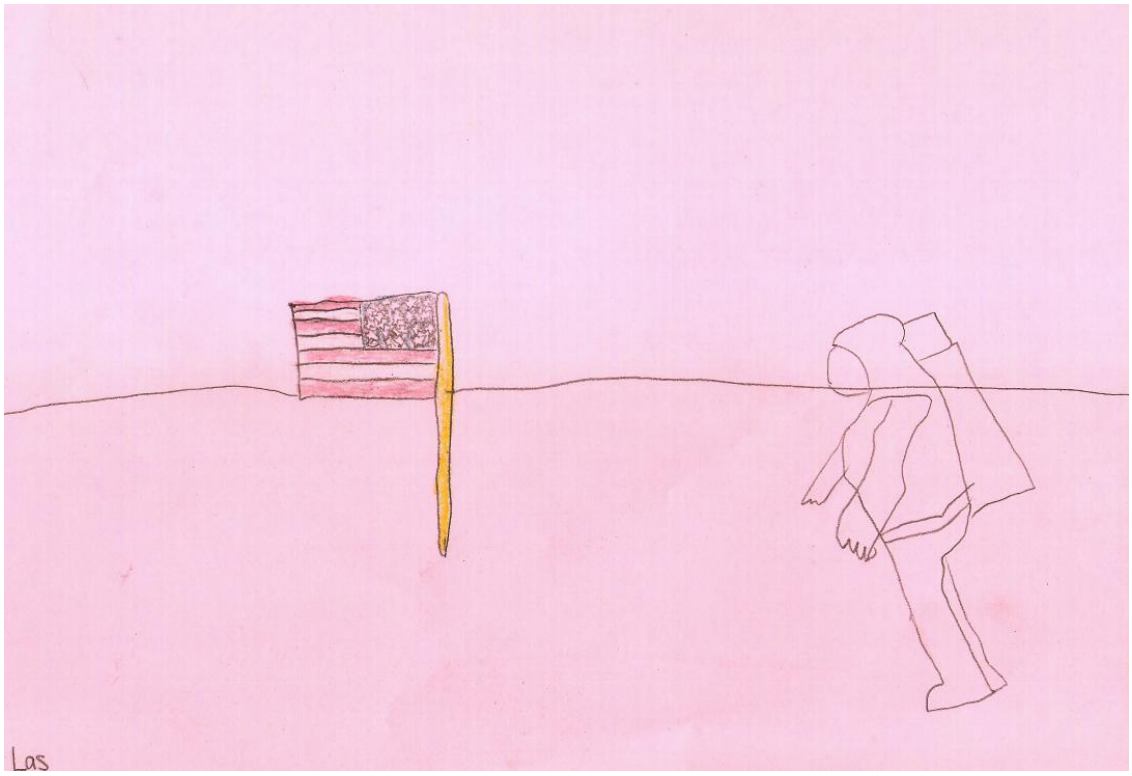

HJ


I.B.

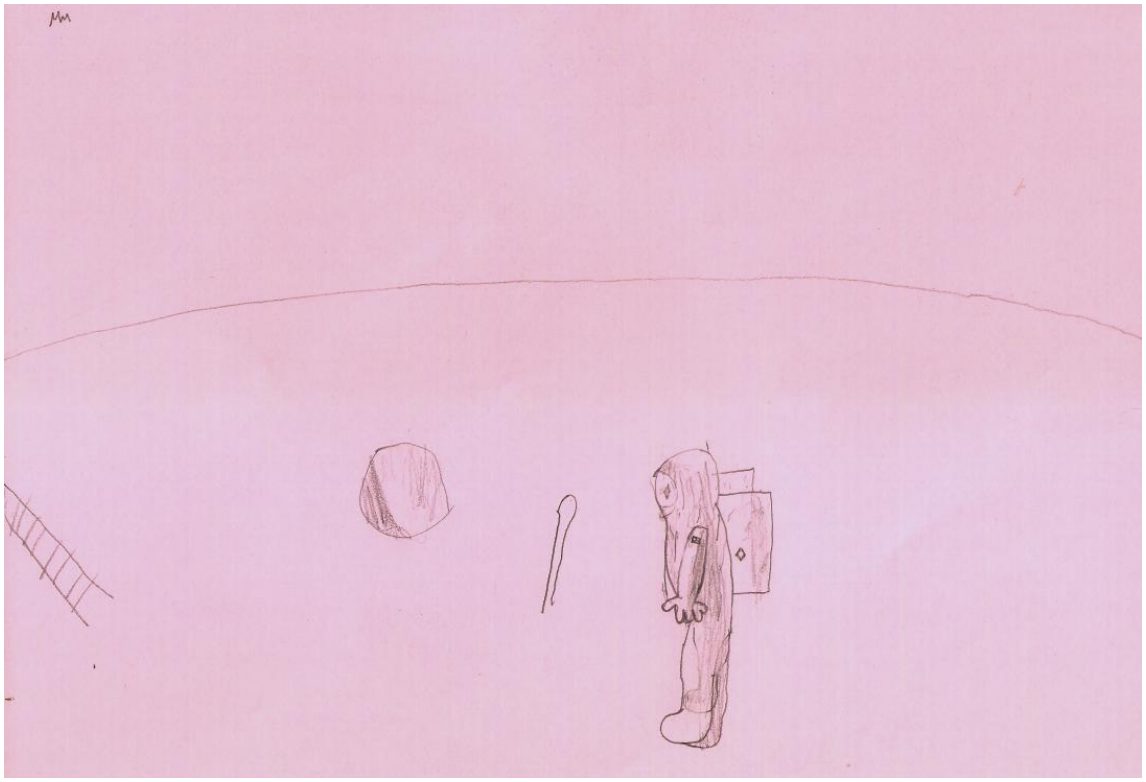


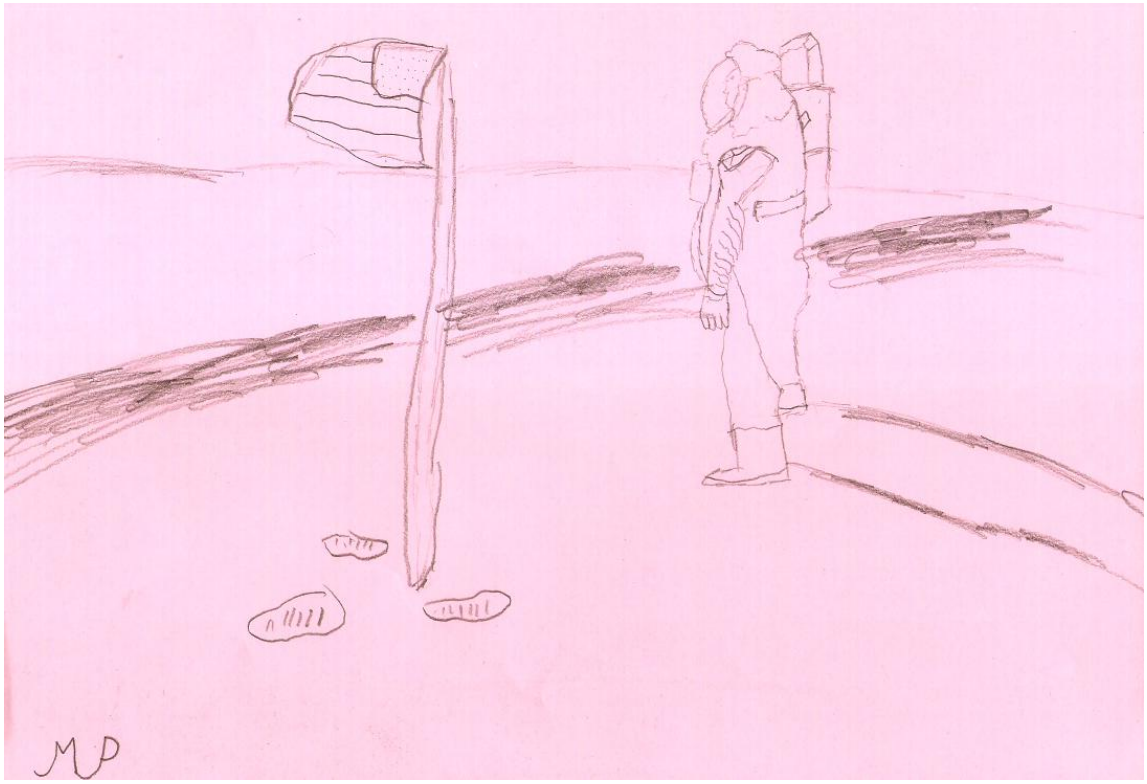

KAH

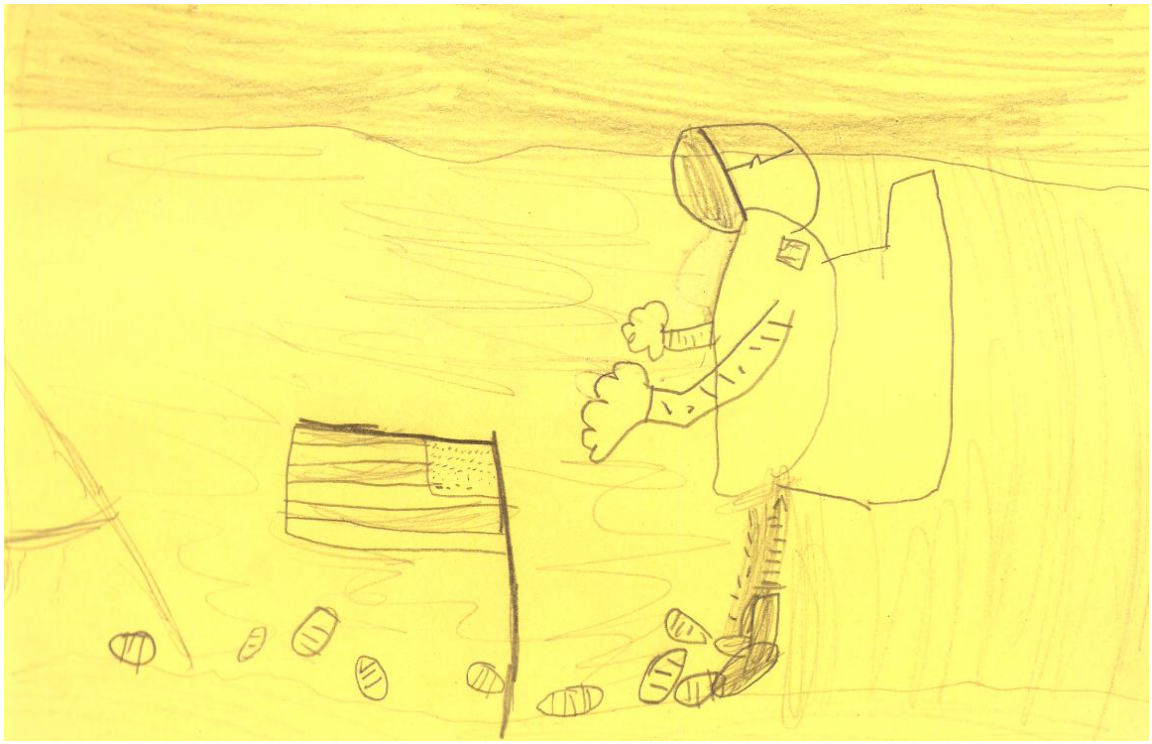


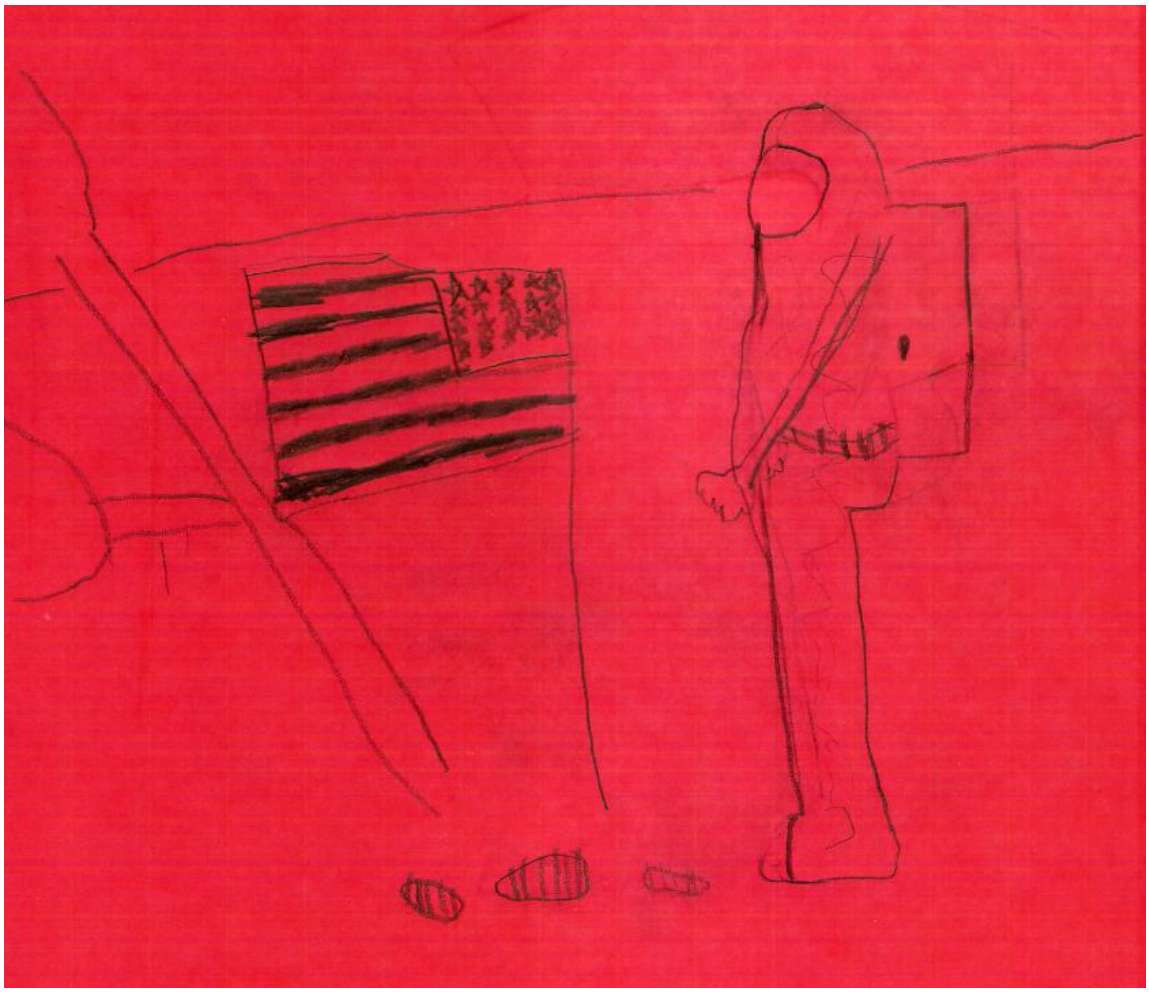

Las

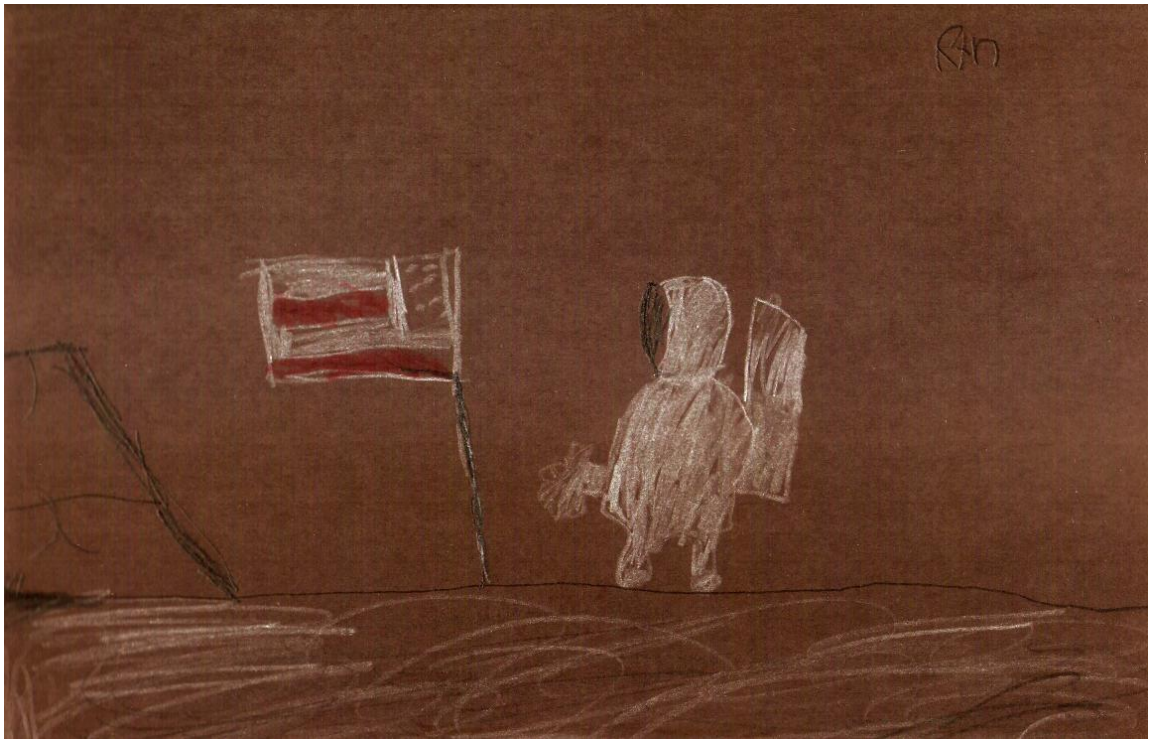

MHH

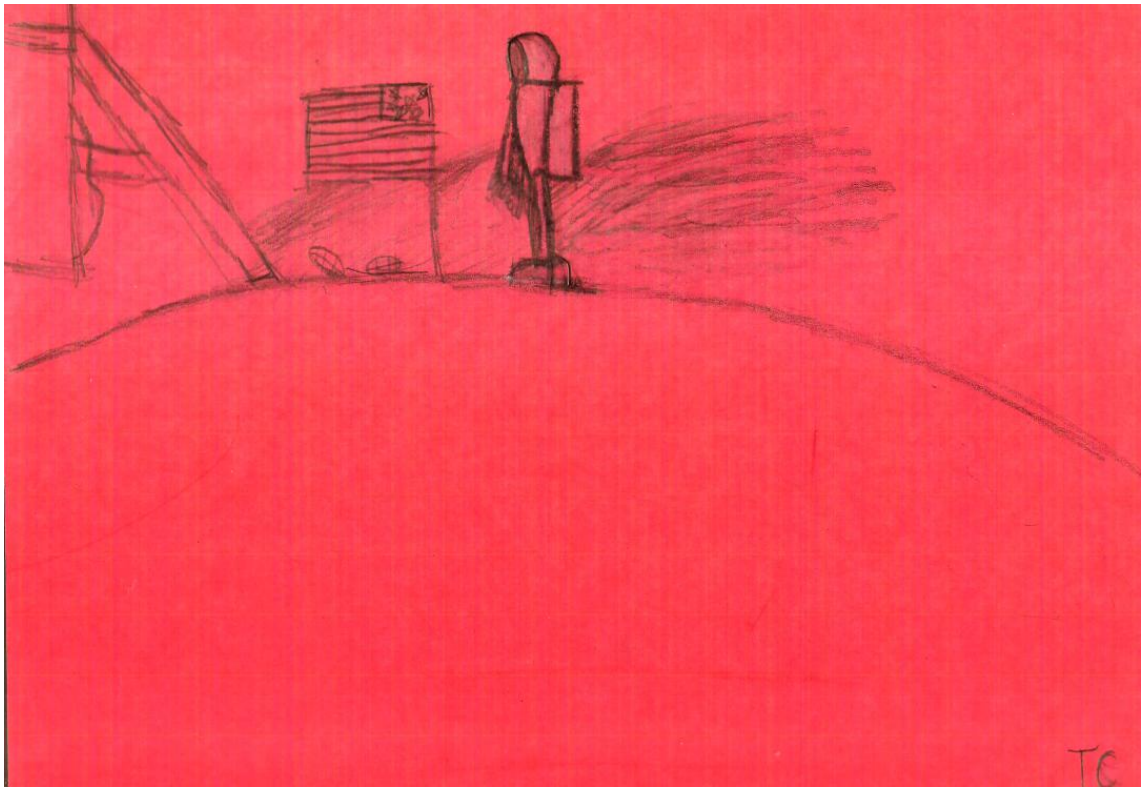


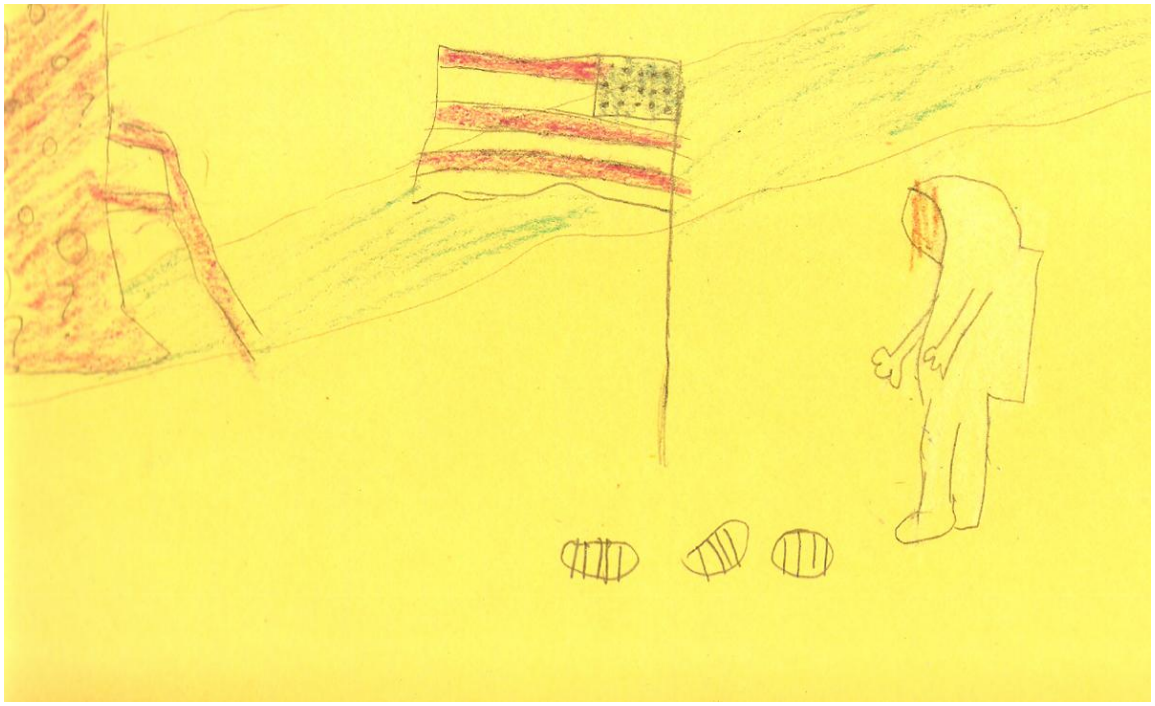


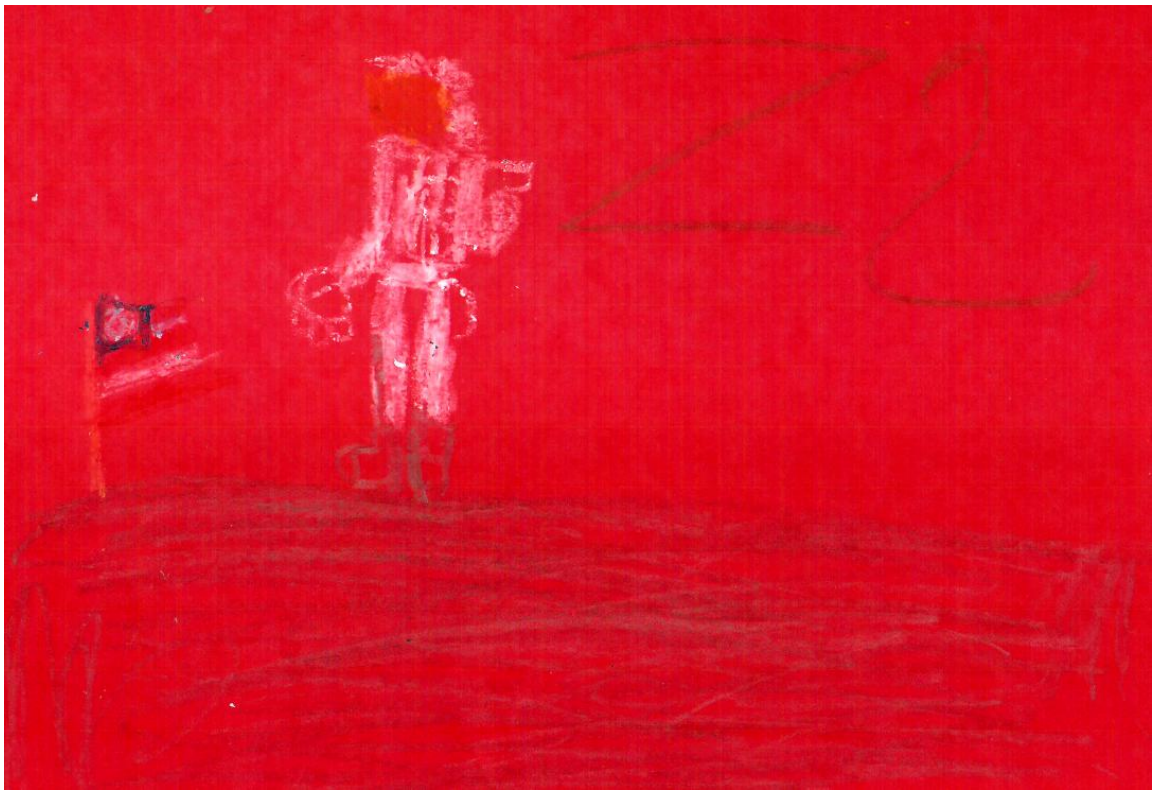






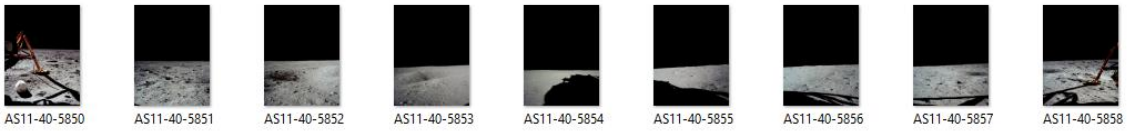






4) **"MY AND NEIL ARMSTRONG'S PHOTO PAN"**: The nine images that comprise this photo pan were printed (11"x14") by the museum's education department, and then affixed to the walls to approximate a 360-degree display. The students were asked to use their cameras/phone cameras to make photographs of Armstrong's images just as he did when standing on the Moon's surface … one at a time ... approximating the 360-degree approach. It was conveyed to the students the emotions that Armstrong must have had during this process. They took their image files home to share with their parents.

Thumbnails of Commander Armstrong's photo pan. He had been on the Lunar surface only eight minutes. He is the first human being to make photographs while standing on another celestial body (Moon).



Tom R. Chambers (Younger Summer Camp Instructor) worked for Brown & Root Northrop as a research analyst in the Biological Sciences section at the Lunar Receiving Laboratory (Johnson Spacecraft Center, NASA) during Project Apollo, 1969-1972. He performed procedures and analyses on the Lunar soil and various animal models (species) to look for pathogens that might be harmful to the biosphere.

After the project, he worked as a research associate in Genetics, Infectious Diseases, and Radiology at the University of Texas Medical Branch at Galveston, and then gradually moved into scientific/medical media as manager of medical photography at Texas Tech University Health Sciences Center in Lubbock. Later he worked in media, the Arts, and education (technology applications).

As a visual artist, he has exhibited his work worldwide. He has taught photography and digital/new media art in Zimbabwe, China and India.

Chambers' public presentation at the "Apollopalooza" event, Wings Over the Rockies Air and Space Museum (July 16, 2019 [2:15-3:15pm, Lowry Room]):

"FIFTY YEARS AGO AT THE LUNAR RECEIVING LABORATORY"

http://tomrchambers.com/LRL_50_years_ago_pres.pdf

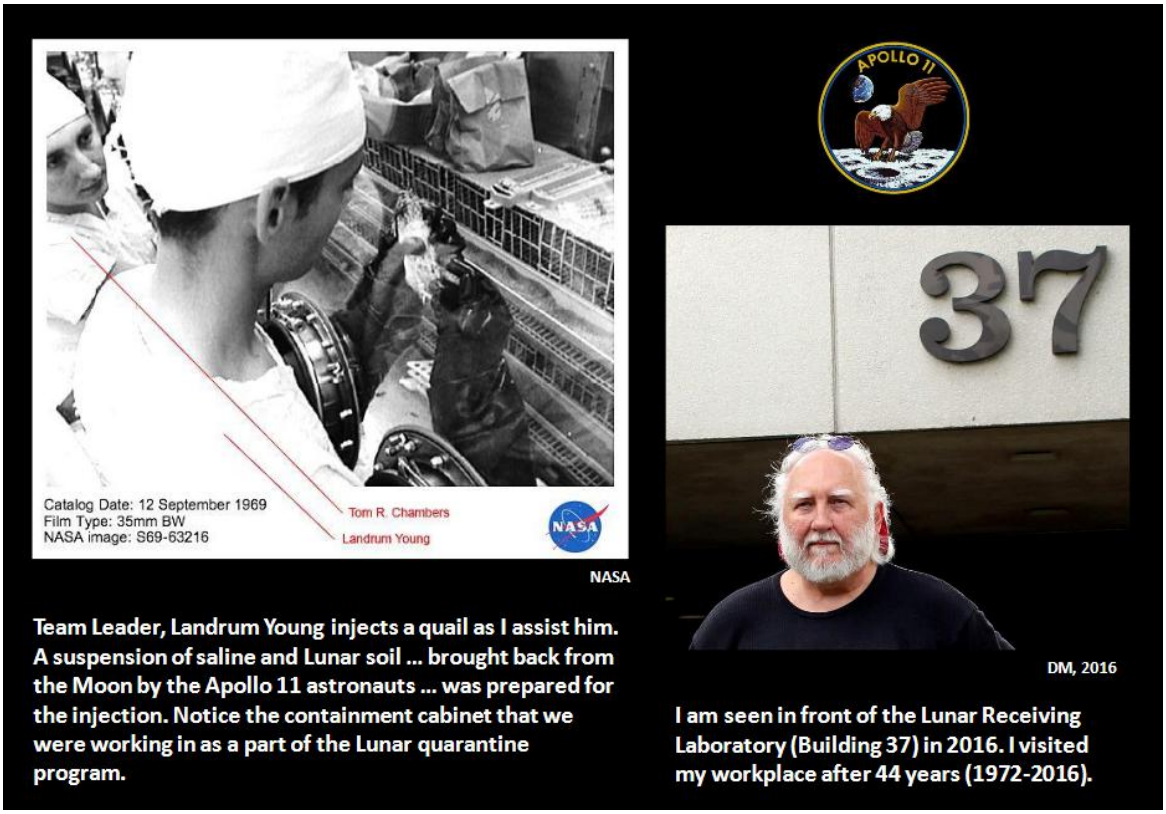
Chambers shared his experiences as a research analyst in the Biological Sciences section at the Lunar Receiving Laboratory during Project Apollo. The probability that life existed on the Moon was extremely low, but the risk was sufficiently high that a quarantine program was justified.

There were three main elements as part of the biological protocol: crew microbiology; in vitro attempts to culture microorganisms from the lunar sample; and the direct challenge of the lunar sample in biological systems. Mr. Chambers was involved in the third element.

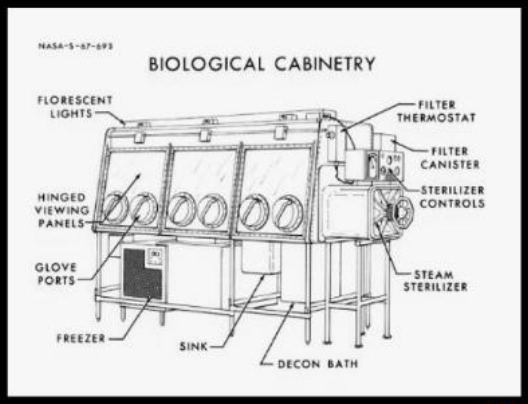
The term “hazard” had to be defined before a method of detection could be developed. Procedures were limited to those capable of detecting an agent that would exhibit classical pathogenicity to some terrestrial life form or that could establish itself in a terrestrial environment and thereby alter the ecology. This guideline limited the search to the detection of replicating microorganisms.

The quarantine approach was to help prevent “forward contamination” (the transfer of life and other forms of contamination from Earth to another celestial body … in this case, the Lunar rocks and soil), and more importantly, “back contamination” (the introduction of extraterrestrial organisms and other forms of contamination into Earth’s biosphere). (Text courtesy of NASA)

A portion of his presentation is seen below:



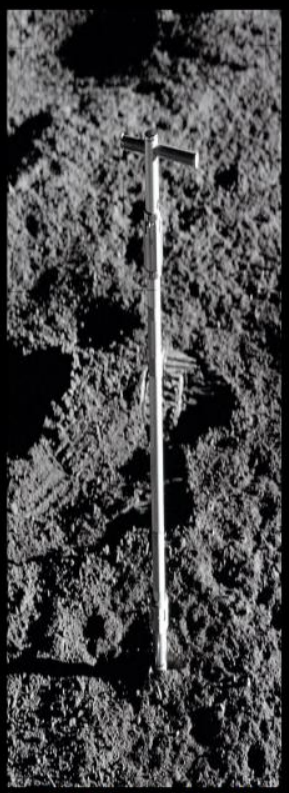
The images below show examples of biological or containment cabinets. I spent a great deal of time working in these cabinets during missions 11, 12, and 14. This quarantine approach was to help prevent "forward contamination" (the transfer of life and other forms of contamination from Earth to another celestial body ... in this case, the Lunar rocks and soil), and more importantly, "back contamination" (the introduction of extraterrestrial organisms and other forms of contamination into Earth's biosphere).



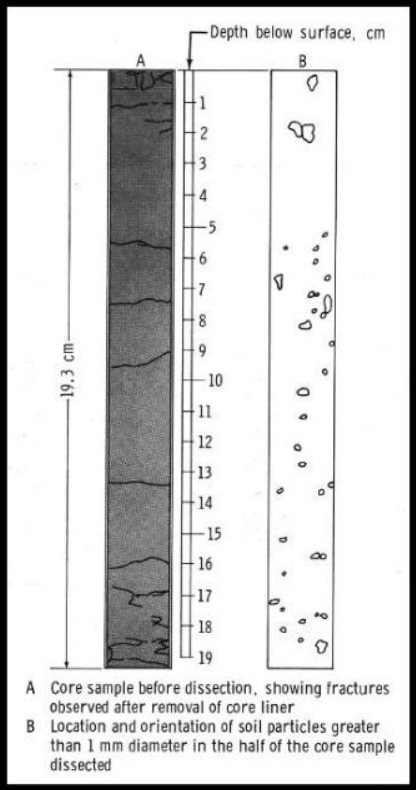
NASA

NASA

Although the formal quarantine for the crew, spacecraft, and lunar samples was over after Apollo 14, procedures for handling Lunar material and protecting it from contamination remained in effect for the Apollo 15, 16, and 17 missions.



Core Tube Sample, Apollo 12, NASA



A Core sample before dissection, showing fractures observed after removal of core liner
B Location and orientation of soil particles greater than 1 mm diameter in the half of the core sample dissected

NASA

If I am correct after 50 years, our prepared sample came from this Apollo 12 core tube ... sample 12026. It was collected in drive tube 1 (S/N 2013) near the Lunar module (LM) at the end of the first EVA period on the northeast edge of Surveyor Crater. The core was 19. 3 centimeters long and contained 106.6 grams of soil. Three small samples were taken from near the top, middle, and bottom of the core for gas analyses; then the core was dissected and split longitudinally. The split was divided into three samples — the top, middle, and lower thirds. Each sample was sieved, then recombined to form part of the BIOPRIME sample (the sample used by us in the quarantine area) (DESCRIPTION OF CORE SAMPLES RETURNED BY APOLLO 12, NASA TECHNICAL MEMORANDUM, NASA TM X-58066, November 1971).

We then took this BIOPRIME sample and made saline suspensions for our injections of the mice (other species).