

# “Look, there’s water on the moon”

In Ramayana there is an anecdote about Lord Rama’s childhood fancy. It is said that the toddler Rama looked up into the sky and pointed at the moon. The attendants and the family members interpreted this gesture as if he wanted to play with the moon. But maybe he was pointing at the water on the moon indicating that he was thirsty. We do not know what happened then; but now



five thousand years later the gesture may be better understood as the scientists interpret the Chandrayan’s mission results.

Scientific support for location of water on the moon must be termed as the biggest breakthrough in space research since it refers to the most fundamental elements that make Earth a unique living planet. Scientists for long knew that the moon had air and fire but water which is critical for the existence of the living beings was nowhere to be found. Therefore the possibility of developing human habitat on the moon was absolutely remote. All this has now been changed due to the confirmation of the presence of water molecules at the polar craters of the moon by the Chandrayan mission launched by ISRO.

Earlier, missions including the Apollo Moon landings data had found that the entire lunar surface was bone dry and dehydrated. The rock samples brought back by the Apollo Mission had confirmed this finding. But scientists and some geologists believe that due to collision of the hydrogen-rich solar winds, which hit the moon surface at half the speed of light interact with the oxygen present in the lunar rocks and cause water formation. Also, there was a theory that the comets and meteors which showered on Earth almost 3.4 billion years ago must have bombarded Moon as well. But due to poor gravity of the moon and total lack of the atmospheric layer which the Earth has, the water carried by the comets must have evaporated from the moon’s surface.

However, with this confirmation of water on the moon, we can turn a new leaf in the moon’s history which may facilitate setting up of base for human habitat within a decade or two. Another interesting aspect of the observation is that moisture has been located at the very upper layer of the polar moon craters. It means that maybe beneath the surface, there could be underground water storage. Since the craters have basaltic rocks structures it is very likely that they will have the same properties as those observed in the Deccan trap regions which have multiple layers of ground water stored over the centuries.

As the human populace is struggling with the problems of conservation of sweet water resources of the world, and battling for stricter pollution control measures, I believe this unique discovery could lead to launching of not only human habitat but initiating breeding of select species of water creatures in the deep underground water reservoirs of the moon.

They might be able to survive with whatever oxygen that could be available from the water and oxygen bearing rocks which may be trapping the water at the underground deep seated aquifers of the moon.

Or you never know that when the scientists reach out to these deep seated aquifers, they may be confronted with the discovery of the moon’s own version of Amoeba. Though we all know that due to lack of atmosphere at the moon there is no such possibility but maybe somewhere deep in the water bearing areas of the moon there could be some unique life forms struggling to survive. After all, when comets and meteor showers destroyed most of the living species on Earth, some life forms did survive the hostile conditions on earth which may be comparable to some areas of the present day moon. Or there may be some other life forms totally unknown to us surviving in the deeper region, who knows?

As students we hope to reach out to the moon and pray that some day man locked on Earth for many a millennia would be liberated to join the polar colonies which will present a unique spectacle with human habitats poles apart. They would be busy harvesting helium which is found in large quantities on the moon and then cross the pole to rest into the permanently dark areas of the moon. So we must keep thinking innovatively to meet the challenge of living on the moon now that the water is there. Maybe it will be our first step to the space Odyssey which we are dreaming for centuries, since the relaunch from moon is more energy efficient for the long voyage!

I have no doubt that when history of the moon will be written, ISRO’s Chandrayan will occupy the same place occupied by Columbus who discovered America and the rest is history... Let us salute the heroes of ISRO for their magnificent achievement.

**Prof. Vijay Page**  
director\_jom@met.edu