

# Noah's Ark - by Narendra Desirazu

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## *Introduction*

This story won the sponsored prize in the [2008 Scifi Contest](#). Author Narendra speculates on a possible collision of events where a martian bacteria may help solve global warming on earth. Read on to find out how things turn out.

## *About the author*

Narendra is an IT professional by day and wannabe writer by night. He is addicted to reading and is usually working on two books at a time. In between reading books on Philosophy and SciFi he loves to read James Hadley Chase, John D. McDonald and others of the same ilk. If asked which is his favorite book his instant answer is 'Catch 22'. This is his all-time fav and he re-reads it every so often. He is inspired by Asimov and hopes that one day he can write a novel on the lines of Nightfall.

## **Bangladesh, 2060**

Gadai wouldn't stop crying. He was miserable because he was wet, wet from the water all around him. His father, Bishnu Prashad, a fisherman in the small town of Chaprashir Hat in the Noakhali District, Bangladesh, came from a tribe of fishermen and for generations they had subsisted on fishing in the sea. The traditional family home was literally on the beach - or had been till last year. Now it was in the sea. As a matter of fact so was most of Chaprashir Hat. There had been many warnings that the sea levels were rising and they should move out to higher ground - but where was Bishnu to go, when his home, which had been occupied by the family for at least the last two hundred years, was under water because the sea had consumed it slowly over the last year. This was a situation beyond anyone's comprehension. They could understand the sea rising due to a storm or a cyclone but then it always receded after its fury was spent. This was very different. The sea had risen so slowly that month by month the waters crept into the town till only the corporation building which was on a small hillock was the sole survivor in the town.

In 2004 there had been an article in the National Geographic talking about the dangers of global warming and especially what would happen if the ice caps were to melt. The article read "At the present temperatures, about half of the snow that falls on Greenland melts and runs off as water. The rest of it stays and is discharged in the form of icebergs. An increase of just three degrees would change the delicate balance, producing an increase in melting that will outweigh the increase in snowfall. This will melt the Polar ice sheets." Further, according to the article, the melting of Greenland's ice sheet would raise the oceans to a height equivalent to a two-storey building, threatening to submerge cities located at sea level, from London to Los Angeles. Even a partial melting of the ice sheet could have catastrophic consequences for low-lying countries like Bangladesh and the Maldives. The general prediction had been that somewhere in the vicinity of year 2100 the meltdown would begin if no counter measures were taken. In 2004, it was felt that humanity had ample time to take precautions and so everyone left it to the next generation to deal with the problem.

The gods in their wisdom didn't see it fit to wait till 2100 but decided to bring on the great meltdown as early as 2060. Already a series of low-lying islands in the Pacific Ocean like Micronesia and Cook islands, Atlantic islands, Maldives in the Indian Ocean were all under water. Most people from these islands had become refugees in neighboring mainland countries. Large chunks of land were disappearing every day. In the next three years, unless something was done (and no one had a clue as to what they could do) LA, London, Chennai, Sri Lanka, most of Bangladesh and many European coastal cities would be under water. There was panic around the earth.

Bishnu Prasad could see no way to make Gadai stop crying. All he could do was try to console him. He would have liked to cry too except that if he cried there was no one to console him.

### **Mars Geostationary Unit, 2063**

NASA had just landed their fourth Mars Lander. The first three Landers had sent back copious amounts of data but nothing conclusive about life on Mars. Low-level aerial reconnaissance of Mars was now possible with the fourth Lander, which was designed to carry two Mars Aerial Reconnaissance and Survey Explorer robots. Based on early research from 2008 when it was observed that if there was ice on Mars it would be all covered with dust and dirt, the MarsBot, a self-programming aerial robot, was specially designed to find ice on Mars' surface. Its on-board software could dig through the dirt (pun intended) and using highly sophisticated pattern recognizing algorithms, analyze the incoming images along with the temperature and other related data to locate possible ice deposits. The idea being, where there's ice, there is water, and where there is water there might be a possibility of life. Once the MarsBot found such an ice patch it could land and take samples.

The first MarsBot flew around seven reconnaissance missions and then suddenly stopped flying. Ground Control could not decipher the problem. The second MarsBot was brought into action which on its sixth reconnaissance mission found a promising patch of ice and procured ample close-ups before returning to the Lander. It was sent back to the location to collect samples. It landed, collected the samples but could not take off again due to indecipherable malfunctions. There were no more MarsBots which halted further exploration of the ice patch. If the patch still remained, analysis was to continue with the next Lander.

The next Lander landed very close to the ice patch to facilitate easy exploration of the patch and to collect a sample to be sent back for detailed analysis. A newer version of the MarsBot was loaded on the Lander this time. This MarsBot was fitted with miniature rockets to allow it fly out of Mars orbit to the Mars Geostationary Unit positioned right above the Mars Lander. Once the sample was in the Geostationary Unit, it could be sent back to the Lunar Space Station on Earth's Moon which had been continually manned by humans for the past 30 years.

### **Lunar Space Station, 2064**

John Arlington was looking at a slice of the sample from Mars which had arrived that morning at the Robotic Microbial Lab at the Lunar Space Station. No human would ever come in contact with any samples being analyzed in this lab to prevent any contamination by earth-borne biology.

John executed a complicated maneuver with the robotic arm. John was relatively junior to many of the veterans in the astro-engineering fraternity at the Space station. This was the last week of his three month stint at the station; He would be starting the Earth Adjustment program for Stationers as soon as he was off duty from today. The program rehabilitated all Space-stationers - humans and animals - to adjust to Earth and its gravity-ridden life. Typically the program back on Earth lasted four weeks for anyone who had been in Space for less than 90 days. It usually took John, who was probably fitter than most astro-engineers, about six weeks to get back on his mountain bike and ride through the trail that started from his backyard in Colaroda. The sample analysis was complete, he would start with the new sample tomorrow.

The new sample was a single tube - one inch in diameter and about 6 inches in length. MarsBot had taken the ground temperatures at the top and at the bottom of the hole from which sample had been taken and this temperature gradient had been dutifully maintained on the sample all through its journey. Also, an amount of atmosphere from around the sample location had been captured to be sealed in with the sample. So in a manner of speaking any organism - if it was alive - in the sealed sample should not know that it had been uprooted from its home rock in space to another rock elsewhere.

John had sliced off a 7-micron slice off the sample and was looking at this under a standard microscope. His first reaction when he saw the bacteria under the scope was that something had gone

wrong and that some microbes had infiltrated the robotic lab. He initiated a thorough test sequence to ensure that the unit was still airtight and that there was no contamination. Once this was confirmed, he sliced off another 7 micron slice of the sample and started a fresh study. He couldn't believe his eyes; was he the first human to look at any form of extra terrestrial life! This was beyond anything he had ever dreamed of. He was so ecstatic that he just sat there silently, looking at the bacteria swimming in their broth, unaware that they had been sighted by an alien. His silence worried Sugu and Entebe, his co-astro engineers who were used to a constant chatter or at least a hum from John.

The rest of the gang, including the Senior Research Director from Earth centre who had flown to the Space Station specifically for this confirmation, verified and confirmed the presence of bacteria in the Mars sample. This was an epochal discovery and justified the cost and the efforts of over 100 years of space exploration which man had undertaken. There was great jubilation in NASA and in all the space research centers around the world. For someone with so little time on the field John was extremely lucky to have discovered what was probably the most exciting discovery in all of human existence – the first life form outside Earth.

After the confirmation of the bacteria was complete, the grunt work of analyzing the bacteria began. John added a few drops of ionized water to the sample to create a culture for DNA sequencing tests. The typical preparation required this water and sample mixture to sit around for a day before using the mixture for other tests. So exactly 24 hours later when John brought the mixture under his microscope he was surprised to find that there was one frozen mass of ice in place of a well-mixed solution of water and mud and some bacteria. He was confused and wondered whether he had mistakenly set the temperature of the mixture container to sub-zero. He prepared another mixture and this time placed it in a special container and adjusted the temperature to above freezing so that there was no danger of the water molecules freezing. But to his surprise when he inspected the mixture next morning it too was frozen.

He was annoyed that this simple activity of preparing the solution for the battery of tests was taking so long. He could not understand what he was doing wrong. He tried again. This time he planned to inspect the solution every hour to forestall any freezing. He mixed another 7 microns of the Mars sample with a few drops of water and let it stand in a temperature-controlled container. When he inspected it an hour later he noticed a few molecules of ice.

This was too much. He set up an observation scope -- a microscope that captured the results digitally to be analyzed later. Twelve hours later he had the digital imaging from the scope, he also observed that the sample mixture was frozen solid. The SOP (standard operating procedure) required that he invite at least two other associates to analyze the digital images with him. This requirement had begun in the early days of digital scope image analysis as it was observed that one person alone could not be relied upon to observe all that was going on under the microscope at the at the same time, and very often there were multiple microbial activities going on. He set up the projection room, invited Sugu and Entebe to observe the scope results with him.

Sugu and Entebe were as puzzled as John. They checked for standard chemical reactions and couldn't find any reason why the water should freeze. It was observed that the temperature of the mixture kept dropping till it stabilized just below freezing and then it stopped. It was also observed that the microbes were in high activity darting here and there till that point of freezing and then all activity slowly came to a standstill. And the most important discovery was that the bacteria multiplied during this period. Further tests showed that if the water mixed solution was exposed to higher temperatures causing the water to melt the same pattern of activity and multiplication repeated itself, followed by dropping of temperature, followed by slower activity till everything just froze.

This was highly unusual, bacteria that could so rapidly suck heat and nutrients from its environment to sustain its life. Other than this one anomaly he observed nothing else that set these bacteria apart

from any other thousands found on earth. He performed the standard tests to verify the bacteria's dangers to human kind, he could find no other risk from the alien microbe.

5 The jubilation of finding extra-terrestrial life would have been earth-shattering - and it was so for a few scientists but for most, there were more pressing problems to deal with: Earth was under tremendous pressure from the slow deluge from the ice caps; most of the fresh water glaciers had all melted; there was an acute shortage of drinking water around the earth. General populace would have been more excited if MarsBot had dug up an eight headed hydra which sucked on human blood for sustenance - a bacteria that used rapidly sucked heat from its surrounding was not something that could stay on front page of a newspaper for more than a couple of days. John and his microbe were soon forgotten.

### **Ahemdabad, India, 2068**

15 Abhi Agarwal was a Senior Research Scientist in the Indian Space Research Organization's Space Application center in Ahmedabad . As a senior scientist in the space research arena, he had access to NASA's Mars reports. He finished reading the report without much interest and sat back to wonder what his wife had packed for his lunch. He remembered the days when she would pack him some freshly made rotis, some sabzi and daal and a bottle full of chaas. In these days of water scarcity, even the thought of water was a luxury leave alone Daal or Chaas. He was feeling depressed at what had become of his life, in fact everyone's life - the extreme shortage of fresh water and the impending war had heightened his sense of doom.

20 While it was not his field of research (he was part of the Indian Astrobiology Research team) he had been mulling on the problem of water shortage for the last few weeks. He felt that as a responsible citizen of this world he had a right, nay duty, to understand the problem. He had read extensively, and even interacted with the UN Council for the Conservation of Glaciers on the subject and came to the sad realization that there was no hope of stopping the ice caps from melting down completely. While the global warming phenomenon had been somewhat arrested, the polar meltdown seemed irreversible - the melting had assumed a "snowball effect" (pardon the pun). Munching on a thepla (a dry bread) he thought back to the days in 2032 when the first solid evidence of a melting perma-frost in the Arctic Zone came to light. There was a lot of debate and speculation and everyone was sure that some great scientific wonder would halt this meltdown. He had half-expected that GE (General Electric) or one of the other international industrial giants to come out with a new refrigeration process that would be implemented in the Arctic, like a giant refrigerator, to slowly freeze the water back to the way it used to be. This had never happened. Back to the present, his scientific mind took over and he sat back in his chair and gave way to imagination - wondering how he would have accomplished the task of refrigerating the polar ice-caps.

35 Whatever system was put in place to freeze the ice caps would have to be large enough to remove heat from the water and transfer it - but then transfer it where, and how would this process work? If only there was some way to convert the heat into something else...

And then the apple hit his head and he almost shouted Eureka!!!

40 The "The Act of Creation" that Arthur Koestler spoke of, "the intersection of lines of thought" which brings together hitherto unconnected ideas and fuses them into a creative synthesis, happened to Abhi. He had merged the problem of melting ice-caps with his reading of the Mars sample report and had come out with a possible solution to arrest the melting. He couldn't sit any more. He rushed to call Anzhelika Petrova at the UN Council for Conservation of Glaciers. He had met her at one of the routine UN organized seminars where they called everyone from Space scientists to garbage disposal specialists and felt that something productive would emerge when all these specialists met. Usually nothing came out of these except a good holiday but this time around it helped Abhi. He had, anyway,

been exchanging emails with Anzhelika. They had started collaborating because his satellite was taking pictures of glaciers which were of interest to Anzhelika.

He presented her with his idea.

5 Abhi's idea was really very simple – why not allow the Mars Bacteria to freeze the Polar Glaciers and in fact any other melting/melted glaciers around the world. Since the bacteria rapidly used up the heat to multiply, the water would freeze (as its heat was taken out) and when there was no more heat to take from the water the bacteria would hibernate until next time there was heat in the water and this cycle would continue ad infinitum.

10 While they agreed that it was great idea, there was a lot of hard work ahead and a lot of questions, particularly concerning the number of polar species whose habitats may collapse due to the freeze.

### **Lunar Space Station, 2069**

15 Abhi was in constant communication with John and Anzhelika. He was frustrated that he couldn't be there with them both while they were running the experiments but then he knew that he couldn't take the journey and what's more the readjustment to Earth's gravity would probably be fatal to his aged heart anyway. So he had to contend with the video unit that allowed him to view John, Anzhy and the robotic experiment container.

20 John had come back to the Lunar Station with Anzhelika. They had come prepared to spend a considerable length of time on the Station this time as neither wanted to leave till they had reached their goal – to create a bacteria (starting from the Mars bacteria) that would survive on Earth and more importantly that Earth would survive an alien bacteria. They had transported waters from Arctic, the Antarctic and from the fast disappearing Himalayan Glaciers. As soon as the bacteria were added to the water sample from any of these places they just died. This was of course expected. The next steps were what all of true science is all about – experiment with the few givens to make it work for what you wanted.

25 It was decided that they would work at acclimatizing the bacteria for one region of Earth at a time. It was a given that you couldn't change the chemical composition of the Arctic Ocean so the solution lay in changing the bacteria in such a way that it would survive the Arctic waters while still retaining its fundamental endothermic nature. So they started with the process of analyzing the Mars sample for all its chemical contents. They then matched this analysis with a sample from the Arctic. The differences were noted and the slow process of genetic re-engineering started. There were many roadblocks and each time the team had to come up with a way around to continue to keep the bacteria alive. And all the while the bacteria could not leave the confines of the Lunar Station Robotic Microbial lab. Slowly but steadily they made progress.

30 When the bacteria finally started surviving the waters they moved to the next step to ensure that the bacteria didn't simply freeze up the entire ocean. This was very possible given that bacteria would continue to use up the heat from the waters surrounding it and continue to reproduce till the surrounding water reached an equilibrium – a complete frozen state in this case. So of course it wasn't as easy as just dropping a few re-engineered bacteria in the polar ice caps and letting them do their magic. How could they be stopped from moving out of the Polar regions?

35 Thermohalinic difference in Ocean currents were put to good use to contain the bacteria. Thermohaline is a combination of Thermo (meaning heat) and Haline (salinity). It was well known that Oceanic currents created pockets of areas with very different temperature ranges and saline densities. Polar Icecaps were one such region with low temperatures and very high saline densities. These thermohalinic differences and the few more marvels of genetic re-engineering were made use of on the bacteria so that they would not survive outside the Polar Icecaps, thus containing them within the region.

45 All this took a long time. The Earth had moved towards a war by then.

## **New Delhi, India, 2072**

Friday, 15th July 2072. The Prime Minister of India today declared that Nepal and Tibet were now a part of India and would be considered its 48th and 49th states. Indian troops amassed near the borders of these countries immediately occupied the two nations manned the strategic positions to prevent any Chinese encroachments. China was extremely unhappy about this declaration and had no choice but to declare war on India.

This was an extremely well-planned move by India including the fact that it made this declaration on a Friday. It would take some time for the world to react and India would use this time to its advantage. The reason for such a well-thought-out move by India was that over twenty major rivers originated from Nepal and Tibet and whoever controlled these regions controlled precious water that flowed from them. The glacier-fed rivers such as Ganges and the Yangtze and Yellow had all but dried out, but there was still hope if you could control the waters of the other river systems at the point of their origin. And so Nepal and Tibet had become immensely important to India and China and in fact the whole region.

There was an immediate offensive attack by the Chinese on both the Nepal and Tibetan fronts. But India had been preparing for this for a while now and was ready for this. The USA decided to go against India declaring that such a move was in total disregard of the sovereignty of these two small nations (completely forgetting the fact that it had declared Canada and Mexico as its states almost ten years ago for the very same reason – to control their water supplies). EU was still on the fence about the whole thing -- they didn't want to get sucked into yet another conflict in the same region.

This declaration by India and the subsequent events led the world to the brink of the next and probably its last World War. The only thing that prevented this from happening was the small alien bacteria that John had found in the MarMarsBot sample.

Abhi was to meet with the Prime Minister the Monday, 18th July. He had made an appointment to meet the PM six months ago and he was given a date which happened to be the first working day after India made its first ever offensive martial move. The timing would have been funny at any other time but right now it was almost a godsend. Abhi had risen to the top most position in Space Applications not only in India but globally too and so the PM had decided to meet with him despite many other urgent meetings, hoping that Abhi would present him with a super-offensive weapon to deter the Chinese.

The first few minutes of the meeting were an utter confusion. The PM's mind was on missiles. Abhi was talking about bacteria. Abhi finally managed to get through to the PM and explain to him what he and a team from around the world had been working on for the last few years. He showed him the results from the Arctic and the Himalayan glaciers. He described how the process would work. He explained and that within a few short years they could restore all the glaciers around the world to their former frozen self and bring back normalcy to the global situation. The PM was delighted to hear about the solution immediately envisioning a glorious role for himself in the ensuing peace process.

Within a few decades humanity was back to its pre-meltdown days. There was still no peace on Earth since humanity and peaceful existence were mutually incompatible. The species that died when their habitats collapsed in the freeze were forgotten as soon as biofactories started producing fish meat of any required flavor, including caviar. To his dying day Abhi remained ambivalent about his effort to save humanity.

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