

Hanging In the Balance: The Future of Manned Space Flight

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The United States has been sending men into space since 1961, and now in the year 2010 this could change. In current discussions of space exploration, a controversial issue has been whether or not to continue manned missions in space. According to *eWeek*, this conversation was initiated when the Obama administration investigated NASA and the goals it maintained for the future. A congressional subcommittee has proposed a bill that will increase NASA's overall budget by \$421 million but will cut the manned spaceflight budget by \$670 million. In addition to these changes, the new budget Obama has set forth for NASA will end the shuttle program by late 2010 ("Lawmakers Slash NASA's Manned Space Flight Budget" para. 1). The recent debates have caused two separate groups, with opposing ideas on the issue, to form. On one side, many in science and politics argue that it is a waste of resources to send humans to space because there are so many places robots can go that a human being simply can't. This camp contends that it is much more effective to send robots into outer space because manned spaceflight is not worth the extra money and risk involved. On the other hand, many in the aerospace business and in the general public argue that nothing can compare to actual human discovery. These people believe that we can learn more by putting a physical person in the environment rather than having a robot collect data to be interpreted later by humans on Earth. My own view is that the United States' manned space program is critical to the continuation of discovery in space.

In order to keep making discoveries and advancing our knowledge of outer space it is necessary to assume the risk and extra cost of putting men in space.

Possibly the most compelling argument against sending humans to space is that it is extremely risky to expose humans to the harsh environments of outer space. If the proper precautions and calculations are not made, the result can be devastating. One of the many hazards of space is an atmosphere far different from that on Earth. In *The Hazards of Space Travel*, Neil F. Comins illustrates the tragic loss of *Apollo I*, the craft intended to carry the very first men to the moon. Because of errors in the design of the spacecraft the capsule became filled with nearly pure oxygen. A spark set fire to material in the craft, which burned rapidly in the oxygen-rich environment. Astronauts Edward White, Virgil “Gus” Grissom, and Roger Chaffee were killed in the accident (5-6). This is just one of many instances in the history of manned space flight that ended with the loss of human life. Many people can more than likely recall the most recent losses of *Columbia* and *Challenger*. In both cases, the entire crew was lost and the media were buzzing for weeks on end about the tragedy. I will concede that sending a human to space is risky business, but every great discovery involves some amount of necessary risk.

Manned missions to space have provided us an infinite amount of knowledge, and in order to keep science headed toward further discovery, we must accept the necessary risks involved in such missions. People risk their lives in their jobs daily, the commercial crab fishing industry being just one example. Members of this industry quite literally put their lives on the line in one of the most dangerous working environments. These men battle high, freezing, and deadly seas just to provide seafood to people all over the world. It seems slightly hypocritical then that people see risking lives in the name of expensive

seafood to be justified but risking lives in the name of science and discovery via manned space flight to not be. What makes an astronaut that much different from these individuals? Astronauts have dedicated their lives to science and are willing to put their lives on the line in the process. NASA itself has even come forward to commend astronauts for assuming the necessary risks of manned spaceflight. Its article on the brave men and women involved in the manned space flight program simply states, “Their food was limited, their sleeping conditions were inhospitable and they travelled with the understanding that unknown dangers could put their lives at risk—yet they fulfilled their missions willingly” (“A Hot Shower and a Hug” para. 2). Although it is tragic to lose human life in the name of science, astronauts know the risks that they assume when they go into space, and they take them on willingly in order to advance the world’s knowledge of science and outer space. Assuming the necessary risk involved in sending men into space has allowed us to make discoveries and will continue to do so.

Furthermore, with the continuation of the manned spaceflight program, the technologies used to keep astronauts safe will only continue to advance, and the issue of astronaut safety will become less and less pressing. The risk of sending humans to space is constantly taken into account as advancements in methods of protecting astronauts from the harsh conditions of space are consistently improved. For example, Albert Harrison explains in *Spacefaring: The Human Dimension* that in early space missions the inside of the spacecraft was filled with pure oxygen. However, scientists and engineers have concluded that it is better for the astronauts to breathe a combination of oxygen and nitrogen gas while aboard the spacecraft. This mixture is most similar to the breathable atmosphere on earth and allows metabolic processes to carry on normally (Harrison 67).

This mixture of gases is also not nearly as conducive to combustion as a pure oxygen environment, cutting down significantly the risk of fire hazards. Harrison goes on to say that astronauts breathe pure oxygen only for three hours prior to exiting the craft to purge the blood of nitrogen. In the event that the airlock fails or the astronaut's space suit decompresses this will prevent the astronaut from getting the bends, a painful and possibly lethal condition in which gas bubbles out of the blood (Harrison 67). This specific advancement exemplifies how the safety of humans in space has been taken into account. Harrison also lists other advances in technology that have improved the well-being and safety of astronauts, including filters and air purification systems, dust coating on space suits to help maintain temperature, water recycling and purification systems, and irradiated food to extend shelf life (Harrison 68-70). These advances in technology have helped to make spaceflight more safe and comfortable for humans. With each new mission, engineers have added a new dimension of safety to lessen the dangers involved in sending men to space.

The second major argument against manned space flight is that it is far costlier than unmanned space missions. There are many missions that can be done in space that do not require a human to be present. These missions, including research on the Big Bang, the birth of stars, collisions of black holes, and measuring dark energy, would cost a few billion dollars. Nobel Prize winning physicist Steven Weinberg admits, “[It is] not cheap, but nothing like the hundred or so billion dollars for a manned return to the moon or the many hundreds of billions of dollars for a manned mission to Mars” (Weinberg para. 4-5). Although I concede that manned missions to space are in fact costlier than unmanned missions, Charles Krauthammer, writing in the *Washington Post*, raises concern about

what could happen if NASA is no longer able to launch men into space. The Obama administration ended the Constellation program, which was expected to present a cheaper way to send humans into space. Rather than using this cheaper alternative to manned space flight, the administration intends for NASA to focus on getting unmanned crafts to Mars while allowing the private sector to launch humans into space (Krauthammer para. 5-6). Krauthammer warns that the idea of allowing the private sector to launch men into space should be alarming. He states, “This is nonsense. It would be swell for private companies to take over launching astronauts. But they cannot do it. It’s too expensive. It’s too experimental. And the safety standards for getting people up and down reliably are just unreachably high” (para. 7). The idea that the private sector could begin aimlessly launching men into space has the proponents of manned space flight concerned. Their opponents constantly insist that sending men to space puts them at extraordinary risk, but seem to be fine with risking human lives so long as the private sector is responsible. No one can deny that sending men to space involves necessary risks; however, the risks involved in allowing the private sector to launch men into space are not necessary and involve too much danger for the astronaut.

Even though manned missions to space are more expensive than unmanned missions, when the alternative is having the private sector haphazardly launching people into space I personally would think that it is worth paying the extra cost for NASA to do it. Someone in the private sector will continue to launch humans into space if the government won’t, and it is simply not worth saving money if human lives will be lost to such an unnecessary risk. Additionally, cutting funds for manned space flight to save money could end up costing us more in the long run. Krauthammer also brings up the issue that with the

U.S. no longer sending men into space, it will have to turn to the Russians for shuttle rides into low earth orbits and to the space station. As work on the space station is not yet complete, the U.S. will have to depend on the Russians to get there. Since they will have a monopoly on space travel it is to be expected that they will charge outrageous amounts of money for rides into space (Krauthammer para. 2-3). Clearly if the U.S. is to continue its construction and research on the space station, it will cost a great deal more now that the U.S. will have to rely on the Russians until the private sector has time to catch up. Work on the space station is not simply going to halt when manned missions to space are put to an end. Therefore, continuing the manned space flight program ends up much more cost effective for the U.S.

Some may argue that with advancements in technology robots will make fewer errors and fewer failures will occur, making manned missions to space obsolete. However, it is still more effective to send a person to space, especially for cases that involve measurement or analysis. Sending humans into space cuts out the middleman, so calculations and assumptions can be made with greater certainty. The childhood game of Telephone illustrates how easy it is to get things mixed up and confused when a so-called middleman becomes involved. In unmanned space flight this is essentially what the satellite or probe acts as. The scientist who analyzes the data brought back from the probe was of course not actually in the environment and has only the probe to rely on for clues. This deep reliance can cause a great deal of confusion, misunderstanding, and misinterpretation of the data, whereas in manned missions, the scientist is actually in the space environment running experiments or tests and the middleman is cut out. As is to be expected with unmanned missions when a middleman is involved, the data are sometimes

confused and misinterpreted, leading to faulty conclusions. Take for example the spacecraft *Viking*, whose mission was to collect soil samples from Mars and analyze the samples for traces of organic compounds indicative of life. According to Ron Cowen, an author from *Science News*, the craft heated the samples to a temperature at which the compound perchlorate breaks down and destroys other organic compounds, and thus when the *Viking* returned to Earth, scientists interpreted the findings of the craft as indicating that life never did and could never exist on Mars. Further missions and research have indicated, however, that Martian soil could contain a few parts per million of organic compounds (Cowen 9). The importance of having a human present for experimentation in space is again made clearly evident by the article “Manned vs. Unmanned Space Exploration (Part 2),” which states simply, “Take the Mars exploration programs: out of 31 missions by the USSR, Russia, the US and Japan since 1960, all but 10 failed and only 5 met their original goals. Compare that to the high success rates of astronaut crewed missions—almost 90%” (para. 4). You can’t ask a robot if something went wrong that could have tainted the data, but a human is capable of accounting for mistakes and adjusting accordingly. Additionally, had a human been present for the *Viking* mission, it is possible that he could have fixed the craft and avoided the loss of millions of dollars due to the failure of a probe.

So much has been gained from manned missions to space that it would be foolish to discontinue this practice and stunt the progress it has made to this point. In *Challenges of Human Space Exploration*, Marsha Freeman explains that the space station has allowed for many new discoveries to be made in medicine, with advances in the treatment of diabetes being just one example. Some biological materials such as proteins are easier to study in the conditions of space because they act more uniformly than they do on earth.

Experiments in space have shown that cells manipulated in certain ways could be transplanted into the bodies of diabetics and act as an artificial pancreas that would increase levels of insulin in the body (Freeman 100). Such a mission could not easily be performed by a robot in space. There is simply too much data and close analysis involved that would make it necessary to have a person physically there observing. Albert Harrison, in *Spacefaring: The Human Dimension*, states, “Our desire to send humans into space has forced us to improve our understanding of biology and medicine” (Harrison 4-5). Everyone can agree that disease will more than likely always be an issue for people as a whole. So much is left to be discovered about the human body and how it functions that it would be foolish not to seize every opportunity available to improve our understanding of it. Manned missions to space provide an excellent platform for biological discovery. With various diseases continuing to plague the human population, it is vital to continue research in this field.

Americans have an undying need to explore and discover, and this should be encouraged through the continuation of manned space flight. Senior astronomer at the SETI Institute Seth Shostak contends that “Some part of each of us wants to ‘boldly go,’ to explore and experience the unknown. The claim that stepping across the threshold of the unknown is too costly or too dangerous wouldn’t have impressed Magellan or Lindbergh. It shouldn’t impress us” (Shostak para. 9-10). Sending people into space is an inspiration for us all to reach higher, explore, and make new discoveries. The manned space flight program forces us to realize what can be achieved when a person reaches out into the unknown.

The United States' manned space flight program has led to many advancements that have furthered the field of science as a whole, and it is imperative that the program be continued. Sending a man into space is compelling and motivational, and shows that the United States is still a force to be reckoned with. The United States has been a leader in manned space exploration almost since the beginning of the space race, and countries across the globe have been imitating our space program for years. With this superiority in manned space flight came prestige. Simply said, sending men into space boosts American morale. John M. Logsdon, a professor emeritus at George Washington University's Space Policy Institute, asserts, "It is inconceivable to me that the United States would willingly give up an activity that has for the past half-century symbolized its leading role in global affairs. Human space flight is part of the American patrimony" (Logsdon para. 7). The human space flight program defines everything which is great about America, and it would be foolish to terminate such a prominent and successful program.

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