Space Exploration: Reasons For American Government To Explore Space

John M. Logsdon in his paper, 'space Exploration' defines Space Exploration as 'the investigation, by means of crewed and uncrewed spacecraft, of the reaches of the universe beyond Earth's atmosphere and the use of the information so gained to increase knowledge, and benefit humanity' (Logsdon). Current space exploration mainly involves research, and that is why its benefits are thought to be long-term-for meant to be seen in years and probably decades to come. That is why some may wonder why the US government would spend billions of dollars in currency needed to curb hunger and disease.

The American Government explores space because of the following reasons: improvement on food supply; improvement on technology; improvement on disease diagnosis/treatment; benefit from economic value of space; and maintain their position on the fight for dominance of space.

To begin with, the first reason why America explores space is for the improvement of food supply. One could argue that investment in research, especially research in space exploration provides long-term answers to unsettled questions of today. For example, questions arose as to what any astronauts on a mission to Mars would eat and what foods would not on future missions. This led to joint research by NASA and USDA to develop plants that can grow, thrive and produce in new environments as posted in the research and science Technology of February 21, 2017,' Krystea Harden', USDA Deputy secretary. When Krystea visited the Kennedy space center, she saw biotechnological research results that resulted in this production of dwarf plums designed to fit in small space and produce fruit continually-not seasonally. She saw plants growing without soil, plants growing with mainly water. These new research technologies could help enrich our agricultural production and conservation efforts on planet Earth and hence result in greater food supplies and reduce hunger.

This same position is echoed by Ernst Stuhlinger in a publication in science on magazine on 'Why Exploring Space and Investing in Research ' by Ethan Siegel. Ernst had the conviction that working for the Space Program would enable him to make meaningful contributions to the relief and potential solution of such serious problems as poverty and hunger on planet Earth. Ernst justified that grander food production through survey, and finer food distribution through improved international relations, are two examples of how intensely the space program can impact life on Earth.

Joseph Bennington Castro in the National Geographic edition of January 21, 2014, describes the advantage of having greenhouses in space including the availability of fresh fruit and vegetables. With all these improvements envisaged, the American government invests in space exploration to improve on food supply; thereby eradicating hunger and starvation.

Another reason why the American government explores space is for technological development. The universe has 8 planets that orbit around the sun. The moon orbits around the earth, which is the planet we live in. Researchers and astronauts, out of curiosity and the need to know more about what is not easily within our reach, have made trips to the moon, but not any other planet. Researchers have plans to some day land in mars. In the meantime, they have to intensify

research into the nature of that planet, and develop technologies that would permit human survival in mars.

Ernst describes how research and technological development in space exploration has provided a unique opportunity to find new materials and methods, to invent better technical systems, to improve manufacturing procedure, to lengthen instruments, and even to discover new laws of nature. He quoted that, “technical innovations generated in the space program find their way into our Earthly technology, leading to better kitchen appliances and farm machines, better sewing machines and radios, better ships and airplanes, etc”,(Ernst). Ernst insists that a voyage to Mars will lead to so many new technologies and capabilities, that the benefits to us on Earth will overshadow the cost of the mission (Ernst).

The NASA news, features and press release of September 30th 2013 states that, by addressing the challenges related to human space exploration, we expand technology, create new Industries, and help Foster a peaceful connection with other countries. In September 2019, SpaceX's CEO, Elon Musk, said the company aspires to build a Starship that will be able to carry people into space, land safely back on Earth, and be fit to pivot around and fly again. Since its founding in 2002, SpaceX has been working towards the goal of making space travel cheaper and accessible to potential space travelers. This may help break the myth about space exploration and enhanced technological advances on Earth.

Furthermore, another reason why Americans explore space is to ensure the improvement in disease diagnosis and treatments. For example; the current coronavirus that has infected over 1 million people today, started in Wuhan, Hubei province in China in December, 2019. While this ravaged thousands of people with many more being infected over the days, weeks, and months, some world leaders, including those of the USA, never imagined its impact on humanity would be as devastating as it is today. The First Case in the United States was recorded around January 12, 2020. As of April 5th, 2020, there were about 305,000 cases of Covid-19, and almost 8000 deaths, according to the Center for Disease Control (CDC) update. Presently, there are people who have been scheduled for covid-19 testing in this area but the test kids are not available. Some that have been exposed and showing Clinical or even told they may have to wait two weeks for tests kits to be available. It means medical personnel handling patients don't have sufficient personal protective equipment (PPE) like masks. There is not enough respiration for patients. The country does not seem ready to complain. The spread of the virus. In some parts Country where task kits are available some take 3-4 days to get the result. In the midst of the chaos, some infection disease experts have tried to develop a test kit that can provide results within 45 minutes. According to Leading infectious disease experts in the United States, this outbreak May Linger on for a while, hence the need for a vaccine against the virus. However, the State development of a novel vaccine may take at least one year or even longer. The curiosity and willingness research papers to face challenging situations, may be helpful in speeding the development of test kits and even vaccines among disease outbreaks including covid-19. A NASA publication of November 2019 edited by Michael Johnson describes a new device discovered by space researchers that would lessen the time between identifying a disease and beginning treatment for it. The gadget that could effortlessly recognize diseases such as HIV / AIDS or tuberculosis depends on a more profound knowledge of capillary flow. These discovery tools are placed at the International Space Station (ISS). The same device could be used to identify Coronavirus particles in the blood of infected people, and quickly too during this pandemic - hence the contribution of space research to improvement of diagnosis and control of infectious disease on earth. Space exploration can therefore lead to long-term

reduction of the impact of emerging diseases on humanity.

Another reason why Americans explore space is for the economic value of space exploits. An ordinary US citizen would expect immediate palpable economic benefits when huge sums of money are spent on space research, rocket launches to the moon, and Astronaut travels. That is however, not the case. It takes time for space research to come up with results that can be useful to questions about parts of the universe, uninhabited by humans. Worst still, it takes even more time for those results to be adapted for use on Earth.

While findings from space works done decades ago are being utilized today for research information, the future, and to bring improved solutions to some of the problems that have faced humanity over time, results and economic benefits of today's space research may only be seen, or felt decades from now. It comes very slowly, but when attained, it is expected to be worthwhile.

The NASA publication of October 2019, edited by Michael Johnson, describes the innovative value of space research, the human/social value, and the economic value. The innovative value is a measure of the potential impact of the new knowledge, and Technical “know-how” being generated through space research and development efforts. The prospective, economic, and social values are measures of the emerging scientific theories, computer models, and technological breakthroughs rising out of that potentially towards concrete application, and the NASA publication States. Finally, the publication describes the retrospective economic and social benefits such as companies formed, products brought to the market, and lives impacted. These represent the “early returns” of ISS investment being enjoyed at the moment.

Meanwhile, there may be research activities that have been carried out by the ISS that led to no major benefits. However, knowledge from such research would have been adapted to develop marketable technologies. An example of this is an innovative company called “mWater” which used knowledge derived from the ISS systems, to develop and market a $10 water testing kit- the NASA publication of October 2019 reported. According to the NASA publication, this test kit did not compete well in the marketplace. However, the accompanying mobile application, “mWater Surveyor,” which records water testing results and aggregates the data worldwide, has become the largest of such data in the world. According to the mWater website, more than 25,000 NGO governments and researchers including the partners such as, USAID, UNICEF, WHO, and the World Bank Innovation fund, are using the data around the world.

Another reason why Americans explore space is because of the constant struggle for dominance in space research and technology. Russia, China and many European countries compete with America for this. Greater knowledge of the Moon, Mars and the galaxies by one country over the other places those countries at an advantageous position. She may eventually be able to dedicate the world order over all other nations because of the advantageous position space holds.

Until recently the US had the pride of having the largest telescopes. Their telescopes according to the New York Times December 23, 2019 revealed the Big Bang, black hole quasars. Recently, the European Southern Observatory, a multinational Treaty Organization has projected to 2025 and the year they would launch an extremely large telescope in Chile. This will be 13 times more powerful than any current active working telescope. This is a threat to American dominance in space research. According to the Department of Defense (D.O.D) News

Forum of March 1st 2019, many nations have advanced their space capabilities and are actively looking for ways to do without America's access to this critical domain. China and Russia have developed anti-satellite capabilities, and other nations such as North Korea and Iran are developing assets, designed to negate American could you come advantages, the D.O.D News forum added. This probably explains why in the creation of the US space force in March 2019, President Donald J Trump stated, “our destiny beyond the Earth is not only a matter of national identity but a matter of National Security”,(Trump).

Merrit Kennedy says, “Military systems in-space provide crucial information to troops”, (Kennedy). For example, the Newsletter lingers to say that, “GPS satellites help the military hit targets precisely.” Satellites gather intelligence, detecting things like missile launchers. “They are also used for communication, and to collect data on the weather,” the Newsletter added (Kennedy). So the fight for dominance in space by world powers influences America to explore space.

In conclusion, the American government explores space because it wants to improve food supply, improve on technology, improve on diseases diagnosis/treatment, benefit from the economic value of space, and maintain its position on the fight for dominance in space as seen above. In spite of the struggle for dominance in space, it is still a better way of nations to invent their resources than reckless and futile spending on physical combat.