The real economics of the NASA space program

The economic results of space exploration, like any great project, can never be comprehended or judged simply in terms of the project's immediate, or even long-term economic payback, since also reaped are both the technological spin-offs hitting many other, even all other projects and industries, and the technological optimism that lays the basis for conquering new frontiers. Whole generations of mankind have been transformed by the accomplishment embodied in Brunelleschi's dome on the cathdral in Renaissance Florence, or by the great internal improvements programs inaugurated in the 19th-century United States, particularly under Abraham Lincoln.

The scientists and engineers graduated and trained for the Apollo lunar landing, like those who came through the training of Admiral Rickover's nuclear navy, have fanned throughout society to make breakthroughs that have given us the artificial heart, new energy sources, and so forth.

Even had President Kennedy's Apollo program failed to achieve its goals, and a landing on the Moon and return to Earth had never been accomplished, the technical manpower and the technological developments accrued from having taken up that challenge would have made it more than worthwhile.

From the ability to operate in orbit above the Earth, mankind gained the capability to survey his planet continuously from space. If the remote-sensing capabilities developed in the Apollo program were actually applied on a large scale, world agriculturalists could intervene to prevent large-scale destruction of food from floods, drought, pestilence, and disease.

From orbit, it is possible to bring even the remotest village into contact with the rest of the world, through the use of communications satellites and small Earth-based antennas. Planning new development projects, where the careful mapping of rivers, geological formations, and other natural features is key, can only be done efficiently from space.

Technologies such as advanced solar cells, which had to be developed for space application, have brought rural communities in India their first bit of electricity—to run a refrigerator, a radio, and a reading light.

Nearly every piece of equipment in today's intensive care units in hospitals were developed when doctors had to be able to monitor the health of astronauts thousands of miles from Earth. It is very likely that tomorrow's breakthroughs in genetic engineering or cancer will be significantly influenced by the problems NASA will have to solve in sending the first human beings millions of miles away, to Mars.

Experiments being performed aboard the Space Shuttle now are producing ultra-pure biological materials that hold out the hope of curing, not simply treating, chronic diseases such as hemophaelia and diabetes.

It is not really possible to turn into dollars what the space program has bought for the world community over its 25-year history. Those who would try to force the space program to justify itself in return-on-investment statistics are either fools, or are out to cripple mankind's most valuable undertaking.

Shuttle launch date slipped from 1978 to 1979, and the process of underfunding the next NASA manned space program was off and running. If President Nixon's Space Shuttle was off to a bad start, President Reagan's space station is faring no better.

NASA has estimated it will cost at least $700 million just to replace the equipment lost in the explosion (excluding a replacement orbiter), pay for the investigation and salvage operations, do the modifications the Rogers Commission might recommend, and store the payloads that were ready for launch until the Shuttle starts flying again. A replacement orbiter will cost about $2 billion, and take more than three years to complete and test. The Congressional Budget Office released a report earlier this month saying that all of this is certainly too much money. They state that money could be taken from the space station program, which won't be built on time without a full orbiter fleet anyway, and from the development of new science experiment payloads, which won't be able to fly, either.

Will the lesson be learned?

This country has a fundamental decision to make. Cuts in operating costs, maintenance, training, and pay through the deregulation of the commercial airlines, produced a year with more fatalities than any other in the history of flight, in 1985.

Space Shuttle accidents are, of course, more spectacular and shocking than airline crashes, but the causes are not that much different. No matter what the investigating bodies may finally determine the cause of the Challenger explosion to be—even if it was sabotage—we have, as a nation, paid for the 15 years of cheating the space program.

By fiscal year 1974, the NASA budget of $2.9 billion