

Saving Hubble

Why NASA made the right choice to fix the space telescope

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You've probably heard this phrase before: "If America can land a man on the moon, then why can't ... (fill in the blank)." The manned space program has come to symbolize the strength of America's technical achievements.

If we can land a man on the moon, then we can do anything.

The Hubble Space Telescope is another example of a great achievement by NASA. In fact, some scientists view the telescope as the greatest advance of astronomy in the past few decades.

The pictures taken by the Hubble Space Telescope have changed our view of the universe. Together with data from other spacebased telescopes, we now know more about the evolution of the universe than was possible with ground-based telescopes alone.

While the manned space program is a testament to the prowess and ingenuity of mankind, it is safe to say that the science output of the Hubble far exceeds the science from the International Space Station.

Yet NASA's budget is weighted toward the manned space program.

In terms of the federal budget, NASA gets only seven-tenths of 1 percent. The Science Mission Directorate at NASA, which encompasses space-based telescopes and unmanned planetary exploration, gets about one-third of NASA's total budget.

One could question whether NASA has its budget priorities straight. NASA is funded by taxes, and the idea of men and women exploring space appeals to the imagination of the public.

On the other hand, NASA's greatest science achievements clearly belong to the space-based telescopes and other unmanned probes.

Imagine what could be done if a tiny portion of the federal budget were reallocated to increase the Science Mission Directorate.

Astronomy is on the verge of greater discoveries as scientists work to explain the newly discovered dark energy, which is responsible for the accelerating expansion of the universe.

Neither dark matter nor dark energy has been explained by the standard model of particle physics. There is something going on out there in space that begs for an explanation, and the only way to understand it is with new and better observations.

Professor Joe Shields at Ohio University, who won a Hubble Fellowship, works with a team of astronomers using Hubble data to show that supermassive black holes are at the center of some galaxies. One black hole

GRAPHIC

- [A look at the telescope](#)
- [Hubble Telescope Facts](#)



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The Hubble provided the sharpest images of the merging Antennae galaxies, about 63 million light years away in the southern constellation Corvus.



Spiral arms and dust clouds appear in the Whirlpool galaxy, seen through the Hubble Space Telescope. The planned repair mission of the telescope will ensure more images such as this one.

was found to have 200 million times the mass of our sun.

Many astronomers now think that large black holes are at the center of most, if not all, galaxies.

OU professor Tom Statler proposed to use Hubble observations to measure the central black in the Andromeda galaxy. Unfortunately, the power supply failed on a crucial instrument, preventing this research.



With the planned repairs to the Hubble, this research can now go forward.

The repair mission also will install new instruments. The Cosmic Origin Spectrograph, for example, will peer with unprecedented sensitivity into the ultraviolet light region.

The new Wide Field Camera 3 is sensitive to wavelengths from the infrared to the ultraviolet and will give new information on the era of galaxy formation, among other things.

Of course, the repair of the Hubble would not be possible without the manned space program. The space shuttle astronauts know the risks involved, but are willing to take these risks to repair and upgrade the telescope, in part because they know about the scientific achievements from space-based telescopes.

If seeing is believing, then the Hubble pictures have changed the scientific view of the universe. NASA made the right decision to repair the Hubble, which required only a small reallocation of funds.

The manned space program has been a boon for the human spirit, but let's not forget the science. I, for one, want to know more about the universe in which we live, and for this we need space-based telescopes.

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