

By Merrill Azriel

Gravity: Space Debris Hits the Big Screen



Poster for the movie *Gravity*.

Credits: Warner Bros

This fall, the science fiction film *Gravity* took the box office by storm. Its sweeping – and often spinning – vistas of Earth as seen from space form the backdrop to a dramatic story of triumphing against the most hostile of environments. But *Gravity* was more than a critical success and a crowd pleaser: it was also an astronaut magnet.

The grab for many was the opening premise: a Shuttle flight out on a mission to repair the Hubble Space Telescope. In real life, NASA sent five astronaut crews to the world’s favorite space telescope from 1993 to 2009. And, everyone agrees, *Gravity* director Alfonso Cuarón did a stupendous job of showing precisely the scene they remember so well. Final Shuttle Commander Mark Kelly wrote in a *Washington Post* article that “Cuarón really was able to capture what it looks like inside and outside of a spacecraft.” Veteran spacewalker Scott Parazynski told *Vulture*’s Gwynne Watkins that it made him homesick for space. Astronaut Garret Resiman wrote in *Forbes* that “The movie does an outstanding job of capturing what it is like to do a spacewalk – much better than

any previous sci-fi film.” We sat down with Hubble repairman Mike Massimino, who spent 16 hours in 2009 performing the final repairs to the Hubble Space Telescope, to get his take.

“The Hubble looked like the actual Hubble. The payload bay was exactly the way we had it configured,” Massimino told us. “I saw the tools we use. Nothing was out of place, nothing was missing. They were exact – I mean there was no way they could have made that up and it come out the same, exactly the configuration we had.”

The Real Danger of Going into Space

But it wasn’t just the hardware that *Gravity* got right: “I think it also shows the real dangers of going into space,” Massimino said.

Massimino had a pretty challenging time on that last Hubble spacewalk. He recently described the experience in an essay entitled *A View of the Earth from the Hubble Space Telescope. Which I nearly broke*. In it, he described a moment when it seemed he had failed in

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his mission: “I felt that I was by myself, and everything that I knew and loved and that made me feel comfortable was far away. And then it started getting dark and cold.” If you think that sounds an awful lot like fictional astronaut Ryan Stone’s predicament, you wouldn’t be the only one. “Sometimes it goes through your mind ‘how’s this going to turn out today? Am I still gonna be around?’” Massimino says. But most of the time, “there’s no real reason to think about that.” On that particular mission, Massimino says he wasn’t too worried about getting killed. “In truth I might not have wanted to come home...but nonetheless I would have come home. In her case I think there was a real doubt whether [Stone] was going to make it.”

That doubt is at the center of *Gravity*, in which just about every major space hazard is trotted into the spotlight. ▶▶



Astronaut Ryan Stone (Sandra Bullock) is knocked loose from the Space Shuttle when it is struck by high speed debris during her EVA in the movie *Gravity*. – Credits: Warner Bros



Gravity astronauts Ryan Stone (Sandra Bullock) and Matt Kowalski (George Clooney) repair the Hubble Space Telescope.

Credits: Warner Bros

There is rampaging space debris, oxygen deprivation and carbon dioxide poisoning, onboard fires, and colliding spacecraft. As Massimino says, “it’s a movie, it’s not a documentary,” but even so, almost all of the issues encountered in the movie can be traced to real-life antecedents. The International Space Station (ISS) actually has had to dodge debris from a 2007 projectile anti-satellite (ASAT) test numerous times. The Mir space station witnessed several dramatic incidents including an onboard fire and a botched docking that resulted in a Progress supply vessel bashing into the Spektr module, partially depressurizing the station. A 2004 spacewalk on ISS had to be terminated after just 14 minutes when the astronaut’s oxygen tank lost pressure. If you’re wondering why *Gravity* is getting so much attention from those in the space world, consider that this is the first time any of these issues has been addressed in a realistic way in a widely accessible public forum. It’s even possible that the attention will bring some needed focus to not only the wonder of spaceflight, but also its dangers.

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Appeal of the Space Disaster

The disaster element is a strong contributor to making a compelling space movie. Massimino suggested that a movie about a real-life EVA would be pretty boring. He participated in filming for the Hubble 3D movie released in 2010 that documented the repair mission of STS-125, but the aim of that mission was, if anything, to avoid excitement. “We wanted to come up with a good movie, but we also had our jobs to do,” Massimino recalls. But, he says, the danger of spaceflight is often what grabs people’s attention. “I get a lot of questions when I’m talking to different groups. They ask ‘what if you get hit with something in space? What if there’s a fire?’ They’re excited by the danger,” he says.

In the pantheon of disasters, space holds a special place. Even when nothing goes wrong – which thankfully describes the majority of spaceflights – the journey itself is an adventure and a risk. It doesn’t take much to turn that adventure into a gripping spectacle.

“When they had a space disaster like they had in Apollo 13, the whole country was paying attention to what was happening. These guys became the focus of everyone’s attention for those couple days we were trying to get them back.”

He was just a kid during Apollo 13, but when the Columbia disaster stuck in 2003, Massimino was an astronaut, and he remembers every minute. “You know the next day the President of the

United States was right there with us at the Johnson Space Center and every media outlet was covering it,” he recalls of the incident that took the lives of seven of his colleagues. “If it was just an airplane accident there would have been some coverage, but I don’t think it would have been to that extent. It was huge because it was a spaceship that was lost and a bunch of astronauts. So I think it leads to big news when there’s something that bad going on in space.”

Space Debris

Many people did pay more attention to space endeavors and space safety in the aftermath of Columbia and prior real-life space disasters. If movies like *Gravity* can help bring attention to space mission vulnerabilities without the tragedy of the real thing, that would be a public service indeed. And number one on the list of issues requiring attention is space debris.

“I remember when they gave us our briefing about our debris hazard talking about how bad it had gotten because of [the 2007 ASAT test],” Massimino recalls of the time before his 2009 mission. Now, with *Gravity* in the public consciousness, perhaps there is enough awareness of the dangers of such tests to discourage their repetition. As Massimino says, “Hopefully that’s something people would pay attention to.”

Read more from our interview with Astronaut Mike Massimino at: http://bit.ly/SSM_Massimino