

WHAT GOES UP DOESN'T ALWAYS COME DOWN

NARRATED BY ACADEMY AWARD® NOMINEE
TOM WILKINSON

SPACE JUNK

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IT'S OUT THERE, FEBRUARY 2012

A MELRAE PICTURES
PRODUCTION

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MEDIA RESOURCES

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Behind The Scenes Short: spacejunk3d.com/making-video.html

Check Updated Theater Listings

www.spacejunk3d.com/theaters.html



FILM SYNOPSIS

“After half a century of space exploration we’re now suddenly faced with what has long been a staple of science fiction—an orbiting junkyard of cast-off space debris.” — Space Junk

With media headlines repeatedly warning us of debris falling from the skies, orbital debris, or “space junk,” has finally risen to the forefront of social consciousness. But what is space junk? How did it get there? Just how big (and serious) is the problem?

Space Junk, narrated by Academy Award® Nominee Tom Wilkinson, is the first movie to explore the exponentially expanding ring of debris that threatens the safety of our planet’s orbits. Harnessing the magical imagery of Giant Screen, Full Dome and Digital Theater, Director Melissa Butts takes us soaring—from the stunning depths of Meteor Crater to an unprecedented view of our increasingly crowded orbits, 22,000 miles above earth.

On-screen, Don Kessler, (ret.) Head of NASA’s Orbital Debris Office and the “Father of Space Junk,” reaches back to the beginning of our solar system for understanding and guides us through the challenges we face in protecting our orbits for the future. At risk is the future of space exploration and the safety of the extensive satellite network that powers our modern day communication systems. This visually explosive journey of discovery weighs the solutions aimed at restoring Earth’s orbits.

Fueling this story are stunning images that transport the viewer by wrapping us in star fields and allowing us to witness massive collisions in space—both natural and man-made—as though we were in the center of the action. “We set out to recreate the most spectacular orbital debris events with scientific accuracy and mind-blowing visualization,” explains Director/Producer Melissa Butts.

Butts' team, worked with the National Center for Supercomputing Applications (NCSA) to create breathtaking visualizations from scientific data. Those visualizations deliver a state-of-the-art visual effects experience.

Melrae Pictures, in association with Red Barn Productions, presents *Space Junk*, narrated by Tom Wilkinson. Directed by Melissa Butts (*3D Sun, Mars 3D*). Produced by Melissa Butts and Kim Rowe. Written by Shane Colton. Lead Visual Effects by Luke Ployhar. Original music by Tom Hambleton, CAS. Director of Photography: Reed Smoot, ASC.

Space Junk is distributed globally by K2 Communications. The 38-minute film is available in both 3D and 2D, for Giant Screen, Full Dome and Digital Theaters.



FACT SHEET

Title: *Space Junk*

Release Date: January 2012

Format: 15/70 and Digital (Also available in 3D)

Description: *Space Junk*, narrated by Academy Award® Nominee Tom Wilkinson, is the first movie to explore the exponentially expanding ring of debris that threatens the safety of our planet's orbits. Harnessing the magical imagery of Giant Screen, Full Dome and Digital Theater, Director Melissa Butts takes us soaring—from the stunning depths of Meteor Crater to an unprecedented view of our increasingly crowded orbits, 22,000 miles above earth.

A Production of: Melrae Pictures

Distributed by: K2 Productions

Narrator: Tom Wilkinson

Directed by: Melissa Butts

Produced by: Melissa Butts
Kimberly Rowe

Executive Producers: Red Barn Productions

Written by: Shane Colton and Michael Benson

Story Consultants: Don Kessler (Ret. Senior Scientist for NASA's Orbital Debris Program)

Director of Photography: Reed Smoot ASC

Lead Visual Effects: Luke Ployhar

Scientific Visualizations: National Center for Supercomputing Applications (NCSA)
University of Texas at Austin

Original Music & Sound: Tom Hambleton C.A.S.

Edited by: Carl Jacobs, Splice

Length: 38 minutes

ABOUT & BIOS

MELRAE PICTURES

Melrae Pictures is an award-winning creator of 2D & 3D entertainment for theatrical, broadcast, Internet, and mobile distribution. Led by Melissa Butts and Kim Rowe, Melrae Pictures focuses on telling compelling stories, often using 3D to enhance the story, creating an immersive experience for audiences.

Space Junk tells the story of how we have reached the tipping point in Earth's Low Earth Orbit – potentially jeopardizing space exploration for future generations. Other Melrae credits include the award-winning science documentary, *3D Sun*, and *Mars 3D* by Twist Films.

PRODUCTION TEAM BIOS

Tom Wilkinson (Narrator)

A popular British character actor, Tom Wilkinson was born on December 12, 1948, in Leeds, West Yorkshire, England in a long line of urban farmers. He first became familiar to an international audience in 1997 with his role as one of six unemployed workers who strip for cash in Peter Cattaneo's enormously successful and multiple Oscar-nominated comedy (including Best Picture) *The Full Monty* (1997). That same year, he was featured in Gillian Armstrong's *Oscar and Lucinda* (1997), and as the rabidly unpleasant father of Lord Alfred Douglas, Oscar Wilde's young lover in *Wilde* (1997). Wilkinson was also shown to memorable effect as a theatre financier with acting aspirations in the multiple Oscar-winning (including Best Picture) *Shakespeare in Love* (1998); also in 1998, he acted in one of his few leading roles in *The Governess* (1998), portraying a 19th century photographer with an eye for the film's title character (Minnie Driver). Over the next few years, Tom would become more popular, especially with American audiences, with such roles as General Cornwallis alongside Mel Gibson in the blockbuster *The Patriot* (2000) and as the grief-stricken father, Matt Fowler, in the critically acclaimed and multiple Oscar-nominated (including Best Picture) *In the Bedroom* (2001). One of those nominations was Best Actor in a Leading Role for Tom (his first Oscar nomination).

Melissa Butts (Director and Producer)

Melissa Butts is an award-winning director/producer and is the founder and chief executive officer of Minneapolis-based, Melrae Pictures. She also directed/produced *3D Sun*, co-directed by Barry Kimm and *MARS 3D*, produced by Twist Films.

Ms. Butts began her career with the award-winning PBS series, *Newton's Apple*, and continued building an impressive body of work as a multi-genre director/producer in documentaries, narrative film and television broadcasts. Her interest in 3D began while making a HD documentary, *MARS: Future Frontiers*, which followed the NASA mission in its attempt to find evidence of life on Mars. On this project, the spacecraft carried special 3D cameras, and the idea of using real-life 3D data to bring the audience closer to the science, emerged as did a new version of the film, *MARS 3D*. An early adopter of new technology, *MARS: Future Frontiers*, was one of just two films to be shot in HD out of 70 in the 2004 AFI Silverdoc's festival, and went on to win the Audience Award for "Best Short."

Ms. Butts other credits include the narratives, *Natural Born Salesman* and *One Thousand Feet Deep*; the documentaries, *MARS: Future Frontiers* and *Past Time*; the live webcast, *WYCLEF JEAN and the Refugees*;

Newton's Apple for TV; and several commercials, including for Namco Bandai, MN Twins, Select Comfort, General Mills, Best Buy and Target.

Kimberly Rowe (Producer)

In addition to producing Melrae Pictures' Giant Screen film *SPACE JUNK*, Kim served as Coordinating Producer on the award winning *3D SUN*. As Managing Partner for Melrae Pictures, she leads development for Melrae Pictures.

With a Masters degree in Social Work, Ms. Rowe has focused on helping individuals and communities tell their stories through various forms of communication. That role naturally transitioned into her current career as a documentary filmmaker. Kim has over twenty years experience launching and developing successful communication and marketing campaigns; experience that serves her well as Managing Partner.

Reed Smoot (Director of Photography)

Reed Smoot has served as Director of Photography on dozens of feature films for television and theatrical release including *Homeward Bound: The Incredible Journey*, *The Windwalker*, and *Russkies*. He was cameraman on the Academy Award winning Documentary Feature *The Great American Cowboy* and Director of Photography for the Academy Award nominated NOVA Documentary IMAX film *Special Effects* and the Academy Award nominated Live Action Short Subject films *The Rainbow War* and *Ballet Robotique*.

He has specialized in the production and photography of Large Format (IMAX) films including *Grand Canyon: The Hidden Secrets*, *Mysteries of Egypt*, and *To Be An Astronaut*. He directed and photographed the IMAX film *The Great American West* and was Director of Photography on the Sony Pictures Classics/Cirque du Soliel IMAX 3D film *Journey of Man*, winning the 1999 Giant Screen Theater Association Award for Best Large Format Cinematography and again in 2000 for *Shackleton's Antarctic Adventure* and in 2005 for *Mystery of the Nile*. Other IMAX credits include *Wild Ocean*, *China: The Panda Adventure*, *The Human Body*, *Jane Goodall's Wild Chimpanzees*, *Ultimate-X: The Movie*, *Mystic India*, *Rovings Mars*, *The Young Black Stallion*, *Mummies: Secrets of the Pharaohs*, and *Wonders of the Great Lakes*. His work in the HD format includes the *U2/3D Latin America Tour*; Walt Disney Pictures 3D release *Hannah Montana: Best of Both Worlds* concert tour film, *The Jonas Brothers 3D Concert Movie* and most recently the Paramount Studio 3D release *Justin Bieber: Never Say Never*. He served as Visual Effects Unit Director of Photography in South America on *Indiana Jones IV* and as IMAX consultant on *Transformers 2*.

In May 2001, he was presented with the Kodak Vision Award for outstanding contributions to Large Format film making and is an active member of the American Society of Cinematographers and the Academy of Motion Picture Arts and Sciences.

SPACE JUNK 101

SPACE JUNK FACTS

1. Since humans have ventured into space, we've embraced "The Big Sky Theory". The Theory holds that space is so big, you could launch anything into orbit, and it wouldn't collide with anything else.
2. In 1978 Donald Kessler (ret.), of NASA's Orbital Debris Office, predicted that within 3 decades random collisions between manmade objects would create smaller debris that would become increasingly hazardous to spacecraft. Known as the Kessler Syndrome, a resulting chain reaction would create exponentially expanding clouds of debris. Even if we don't launch anything else into space, an orbiting belt of debris could very well alter space exploration, as we know it.
3. Over the last 50 years, we've launched several thousand satellites into space. Yet there are only around 1,000 spacecraft that are operational at this time. Once an object stops functioning, we simply leave it in orbit.
4. That's a whole lot of junk: It's estimated that LOW EARTH ORBIT (LEO) contains 6,000 tons of space junk. GEOSYNCHRONUS ORBIT (GEO) is home to 400 dead satellites, parked in a higher graveyard orbit, where they will remain for hundreds of years.
5. Manmade satellites fall out of orbit and burn up in the atmosphere regularly. However, not all objects decay upon reentry. Those that survive fall to earth at very high speeds. Fortunately, 70% of the earth's surface is water, greatly reducing the chances that a piece of space junk will fall in a populated area.
6. Upper stage rocket bodies weighing several tons make up a good portion of the junk in space... as do mission-related objects like cast-off bolts or o-rings. The rest are miscellaneous fragments: exploded rockets, left over fuel, and the list goes on.
7. In LEO, satellites often experience what satellite operators refer to as "close approaches" -- two satellites passing within just a few short miles of one another. Amazingly, that can happen around 1,500 times a day.

THE FATHER OF SPACE JUNK

Donald Kessler

Dreaming of becoming an astronomer one day, Don Kessler entered NASA's cooperative education program to study physics. He started out studying natural meteoroids, but his attention soon shifted to debris from space launches.

Kessler wondered, "Since natural collisions occur in space what will happen with all the man-made material we were putting into space?" That question led him to published his landmark paper, "Collision Frequency of Artificial Satellites," detailing the science behind what is now unofficially known as the Kessler Syndrome: Space junk collides with other space junk, producing more and more fragments, until the debris eventually renders low Earth orbit impassable.

Based on this work, Don went on to run NASA's new Orbital Debris Program. Don retired from NASA in 1996 and most recently he chaired the 2011 National Research Council's committee on *Limiting Future Collision Risk to Spacecraft: An Assessment of NASA's Meteoroid and Orbital Debris Programs*.

ONLINE RESOURCES

Learn more about space debris, hypervelocity impact testing, mitigation guidelines and how to track debris:

NASA Orbital Debris Program:

<http://orbitaldebris.jsc.nasa.gov/faqs.html>

European Space Agency (ESA)

http://www.esa.int/SPECIALS/Space_Debris/index.html

White Sands Hypervelocity Impact Testing

<http://www.nasa.gov/centers/wstf/laboratories/hypervelocity/index.html>

U.S. Space Surveillance Network

http://www.stratcom.mil/factsheets/USSTRATCOM_Space_Control_and_Space_Surveillance/

IADC Space Mitigation Guidelines

<http://orbitaldebris.jsc.nasa.gov/library/references.html>

TRACKING DEBRIS

How Do We Track SPACE JUNK?

Since 1957, the U.S. Space Surveillance Network tracks and catalogs thousands of pieces of space objects which are 10 centimeters in diameter (baseball size) or larger. Gathering data from 25 sites around the world, analysts are able to track these large pieces of spent rocket stages, dead satellites and misc. fragments.

It is estimated that there are over 500,000 pieces of debris the size of marbles and tens of millions of particles far beyond detection that produce craters on spacecraft.

INTERVIEW WITH THE DIRECTOR: MELISSA BUTTS

Why did you choose to make a film about Space Junk?

Space Junk is a really cutting-edge science story, in the sense that is the kind of science that we're deeply connected to. I'm not sure everyone is aware of that, but we are definitely connected to space—through satellite communications that provide us cell phone and smartphone service, television signals, weather forecasts, and military communications.

I was attracted to this story because the space environment is now threatened. When we make people aware of that they seem to “get it” and understand that 50 years of exploration have had an impact on space and there are consequences for our actions.

Is the timing, as a number of orbital debris stories have made media headlines, a coincidence?

It isn't a coincidence that media headlines of falling debris are growing just as we launch this film. As we started researching this story we found that most scientists agree we've reached this tipping point where orbital debris will continue to grow exponentially if we don't address the problem. There were two recent events, which we explore in the film that have proved to be real game changers and spiked concern. For example, it's not uncommon that the International Space Station has to dodge a piece of debris from one of those two events.

As a director what were the biggest challenges you faced in making the film?

Of course anytime you are lugging a 300 lb. camera over a crater and up a mountain there will be inherent challenges!

One event that was absolutely nauseating was at a spring shoot in Arizona. We had 2 helicopters, 3D camera, cranes, crews, a location in a crater that was 500 feet deep—and in came a blizzard that dumped 30" of snow. It's not supposed to snow in April in Arizona! We awoke to find it had all melted the next morning and definitely breathed a huge sigh of relief.

But there were several other challenges we faced in producing this film. A big one was that when we started to visualize what the film would look like we realized that this has never been visualized before. While that presented a challenge, it was also an opportunity to be creative. We actually ended up working with data collected by a number of leading universities, and the National Center for Supercomputing, to generate scientific visualizations of naturally occurring collisions in space that are pivotal scenes in the film.

***Space Junk* follows your “3D Sun” release. Where does your intrigue in space themes come from?**

Why do I make space science films? Well, I never really did well in science in high school. I was an average student. What I really enjoy now that I am creating these stories are the people behind the science. It's bringing the science to that human-interest level that really propels and motivates me. How can I tell the story in such a way that people like me are going to be interested in it?

What do you hope the take away will be from this film?

I hope that people take away from this film that there are consequences to our actions. What do you expect when we launch thousands of things into low earth orbit and we aren't doing anything about it.

On the flip side of that were there is a will, there is a way. We haven't quite figured out how we're going to clean it up yet, but I believe—and the film says this pretty clearly—there is a will to make it better.

I expect that young people watching this film in various parts of the world will be integral in finding a long-term solution.

INTERVIEW WITH THE FATHER OF SPACE JUNK: DON KESSLER

As the “Father of Space Junk,” how do you feel seeing *Space Junk* come to the giant screen?

I think the film does a good job of showing what’s going on in space regarding orbital debris. It takes a vitally important subject, that is difficult to understand, and clearly explains why we should all be concerned about it.

It’s something I never thought would happen. My hope is, that with the help of *Space Junk* that other people will end up learning about the implications of orbital debris. Scientists are predicting that the amount of orbital debris will increase. Those predictions are becoming reality today. It will require international cooperation to address this problem because it is a global phenomenon. It’s up to the international community to address the issue. Not just the United States.

Is interest in orbital debris is increasing?

The national interest has increased because of events in recent years. There have been satellite collisions in space. Reports of falling space debris are always cropping up in the news media. In fact, just in the last few years NASA came out with very strict guidelines dealing with falling orbital debris and safety issues on Earth. Since those guidelines were written, two satellites re-entering Earth’s atmosphere have gotten a lot of attention because they exceeded the criteria that NASA established for safety on the ground.

Your thoughts on translating the science story to the big screen?

It’s a real challenge taking scientific data, predictions and theory and translating that to the big screen. There is so much happening out there in space, at incredibly high speeds over fantastically long periods of time. To capture that and to showcase it in such a way that truly portrays the concepts of reality takes a true talent. And *Space Junk* accomplishes that.

What is your reaction to the scientific visualizations in the film?

I was very impressed with how the filmmakers portrayed the violent collisions of drifting space junk and how those collisions lead to even more uncontrollable debris in space. Those collisions are the result of satellites and other man made objects travelling at incredibly high speeds—some five miles per second. The resulting impacts can create hundreds of thousands, even millions of pieces of debris. *Space Junk* creates the impression that space is crowded. And it is!

Space is finite and you can’t put so much stuff in space without managing the way that you do it. And that is extremely important.

How will educating the public, through this film and other ways, make a difference with world leaders?

I think it’s the only way that you can get the government to take action because I feel like we suffer from such a lack of understanding of what the real issues are- and what we need to do in order to solve those issues. And I think we get the false impression that if we put these things off and wait until we have “more money” or more capable of doing it- that there’s justification for that. Understanding the issues of orbital debris now- today- will make it possible for solving the problems before they get any worse.