Star Wars forever?

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The current debate over missile defence has failed to emphasise that a war in space could create a battlefield that will last forever, encasing our entire planet in a shell of whizzing debris that will thereafter make space near the Earth highly hazardous for peaceful as well as military purposes.

Every bit of debris in orbit higher than about 800 km above the Earth's surface will be up there for decades, above 1000 km for centuries, and above 1500 km effectively forever. About 9000 objects larger than 10 cm in diameter are currently tracked, and there are probably more than 100,000 pieces of orbiting debris larger than a marble. But crowded near-Earth orbits are where the Bush administration in the US wants to put parts of its new missile defence system, such as space-based lasers and interceptors. Such weapons are forbidden by the 1972 Anti-Ballistic Missile (ABM) treaty. But on December 13, 2001, President Bush announced his intention to withdraw from the ABM treaty.

Maybe the reason missile defence has gotten as far as it has is that so few people understand the laws of physics. But these laws, unlike human laws, are immutable. We can ignore them, but we cannot escape them. The nickname "Star Wars" for missile defence all too accurately reflects the popular fantasy impression of how things work in space. In the *Star Wars* movies and in other popular science fiction films, we see things blow up in space and the fragments quickly dissipate, leaving space clear again. But in reality, space never clears after an explosion near our planet.

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The fragments continue circling the Earth, their orbits crossing those of other objects. Paint chips, lost bolts, pieces of exploded rockets – all have already become tiny satellites, travelling at about 27,000 km per hour, ten times faster than a high-powered rifle bullet.

There is no bucket we could ever put up there to catch them. Anything they hit will be destroyed and only add to the debris. A marble travelling at that speed would hit with the energy of a one-ton safe dropped from a three-story building. With enough orbiting debris, pieces will begin to hit other pieces, fragmenting them into pieces, which will in turn hit more pieces, setting off a chain reaction of destruction that will leave a lethal halo around the Earth.

To operate a satellite within this cloud of tiny missiles would be impossible. No more Hubble Space Telescopes or International Space Stations. Even the higher communications and GPS satellites would be endangered. Every person who cares about the human future in space should also realise that militarising space jeopardises the possibility of space exploration.

No real space war has to be fought to create this catastrophe. Any country that felt threatened by America starting to place lasers or other weapons in space would only have to launch the equivalent of gravel to destroy such sophisticated weaponry. And much of this metallic gravel, plus fragments of broken weaponry would remain in orbit.

Who can imagine that someone like Saddam Hussein, who set fire to the oil wells in Kuwait and caused an environmental disaster with no military purpose, would hesitate to launch gravel if he felt it was in his interest? And whose fault would it really be, once America has taken the decisive step alone to put offensive weapons in space, against the wishes of even its closest allies? Our planet, so beautiful as seen from space now, would be blanketed in a cloud of metallic garbage that would be a sign of our cosmic arrogance and stupidity forever.

Wise people have pointed out that missile defence can't work, will harm our security more than enhance it, and will waste hundreds of billions that could be spent defending against the real threats of the modern world. These truths are expressed on a scale of political debate to which the public is accustomed, and often cynically ignores. The true cost of Star Wars is on another scale entirely – a cosmic scale.

Short term political interests pale before the overwhelming, eternal immorality of imprisoning Earth for all future generations in a halo of bullets. Even Nazi officers chose to disregard Hitler's orders to destroy Paris. The American people must stop our short-sighted government from destroying something incomparably more valuable – the sky itself.