How to destroy an asteroid without nuking each other first

April 25 2019

An artist's impression of an asteroid breaking up. Credit: NASA/JPL-Caltech

In the event of an asteroid heading to Earth and likely to cause catastrophic damage, an Armageddon-style nuclear explosion may well be our best line of defence. But would doing so lead the way to potential space-based nuclear apocalypse instead?

Professor James A. Green from the University of Reading has explored the legal issues surrounding the 'nuclear option' in a new article published in the *Hastings International and Comparative Law Review*. The paper looks the potential risk of seeing a Ronald Reagan-esque Star Wars scenario in space, if 'asteroids' become a justification for ignoring laws that prohibit using nuclear weapons in space.

James A. Green, Professor of Public International Law at the University of Reading said:

"I was somewhat surprised when I began looking into the hypothetical situation in Michael Bay's Armageddon. In particular, not only are there serious scientific discussions about the merits or not of a nuclear approach to asteroids, but legal restrictions that currently would mean that the heroic actions of a group of ragtag oil drillers likely would be in breach of a number of international treaties.

"The current state of the law leaves us in a 'damned if you do, damned if you don't' scenario. The prohibitions in place protect us from space nukes but put us at risk of extinction if that killer asteroid ever appears. If we don't relax the law a little, then countries may just ignore the law to shoot down an asteroid, which would challenge the whole legal regime; relax the law too much, though, and we risk undoing all the efforts made to stop a nuclear space age."

While the risk of a Near Earth Object (NEO) hitting our planet is very small and most small NEOs are likely to disintegrate as they enter the atmosphere, NASA's NEO observation platform discovers around 40 objects each week, and currently lists around 1900 asteroids that could be 'potentially hazardous' to our planet.

Following a 2013 asteroid impact in Chelyabinsk in Russia, the UN develop an initiative to combat an apocalyptic asteroid strike. Prior to

2013, most of the activity has been focused on identification of asteroids rather than ways to tackle a potential asteroid impact, although recent efforts by the European Space Agency have looked at the feasibility of technology to deflect asteroids on a collision course with the Earth.

While US President John F. Kennedy and co may well never have dreamt of a scenario in 1963 where a nuclear weapon would need to be used against a NEO, Professor Green sets out how the passing of the Limited Test Ban Treaty among other provisions restricts the exploding of nuclear bombs in space.

The paper goes onto look at arguments for and against a NEO scenario being so exceptional as to get around these treaties. Green however concludes that were the events of Armageddon to actually be required, unless we develop some forms of legal exception, states will take measures into their own hands – which is worse.

Professor Green said: "At the same time as I was conducting this research, the US Government began talking openly about both asteroid defence and about the militarization of space. Far from being an escapist, full of explosions blockbuster, the idea behind the film and this research sets out some of the considerable legal questions that would need to be asked in the event of an impending asteroid."

More information: James A. Green, 'Planetary Defense: Near-Earth Objects, Nuclear Weapons, and International Law' (2019) 42(1) Hastings International and Comparative Law Review 1-71. repository.uchastings.edu/hast … review/vol42/iss1/2/

Provided by University of Reading