

# WHAT ABOUT COMETS?

Joel Marks

University of New Haven and Yale University Interdisciplinary Center for Bioethics; Yale University, PO Box 208293, New Haven, CT 06520-8293; 203-932-7103; [jmarks@newhaven.edu](mailto:jmarks@newhaven.edu)

## ABSTRACT

Current planetary defense policy is like the sound of one hand clapping: It omits one of two essential components, namely, comets, and in particular long-period comets, whose appearance on Earth's cosmic doorstep will not have been anticipated. Such an apparition has the potential to end human civilization, and the threat is ever-present. Yet current policy favors addressing the threat from asteroids, which, while certainly also real and ever-present, does not, I argue, merit the relative exclusion from consideration of the cometary threat. They are equally urgent, each in its own way. Further, meeting the cometary threat will call for a greater investment of resources, and hence requires even more attention, education, and political will than do asteroids.

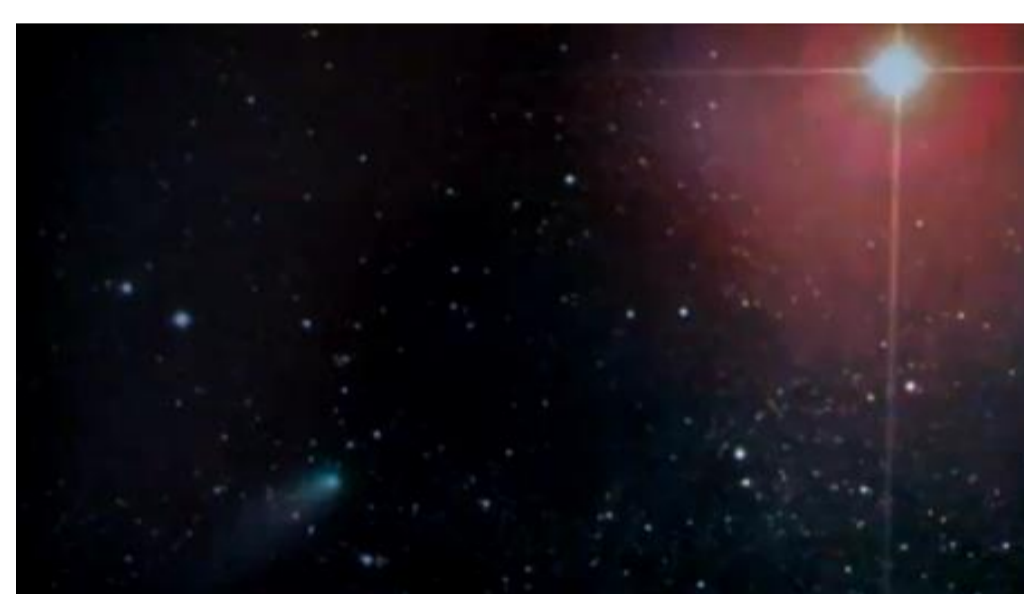
## NEXT IN LINE?

Jupiter



Shoemaker-Levy 9 (D/1993 F2)

Mars



Siding Spring (C/2013 A1)

Earth



Deep Impact (?)

## ARGUMENTS

Marks, J. "What about Comets?" Accompanying paper for IAA Planetary Defense Conference 2015.

Marks, J. Forthcoming. "Heaven Can't Wait: A Critical Look at Public and Private Sector Responses to the Risk of Impact by Asteroids and Comets" in *Commercial Space Exploration: Ethics, Policy and Governance*, edited by Jai Galliot (Farnham UK: Ashgate).

## CONCLUSIONS

(1) Relatively small asteroids are a necessary but not a sufficient focus of planetary defense. The threat of impact by a comet, large or small, must also be addressed.

(2) "Find 'em early" is a necessary but not a sufficient guiding principle for planetary defense. A deflection infrastructure also needs to be in place *prior to* the discovery of the next short-warning potential impactor.

## RECOMMENDATION

Assume that the next potential impactor -- asteroid or comet, small or large -- will be discovered *the day after* we have prepared an adequate defense against it, were we to be planning, testing, building, and deploying both the requisite detection and deflection infrastructures, in earnest, today and forever.

Manhattan Project



Apollo Program



Planetary Defense

