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WHAT ABOUT COMETS?

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ABSTRACT

Despite the recent impressive strides in surveying near-Earth objects and developing technologies of deflection, planetary defense is currently hobbled by an inadequate conception of, and hence policy regarding the total threat of impact by extraterrestrial bodies. For various reasons, plausible in themselves, the focus has become asteroids, to the relative neglect of comets, and in particular, long-period comets.

Asteroids are seen to be both more threatening and more manageable. They are more threatening because there are so many of them that could cross Earth's orbit; they are more manageable because we will soon be able to track almost all of the ones that could do us serious harm, and their closing speed might well provide us with the decades of advance time we would need to prepare an adequate defense against them. Comets, to the contrary, are relatively rare visitors to the inner solar system; and when a new one does arrive from the Oort Cloud, should it happen to be headed our way, it is not likely to be detected in time to deflect it.

My contention is that these considerations do not lead to the conclusion that comets may be safely ignored for the time being, but, quite the opposite, lead to the conclusion that an adequate defense against comets needs to be pursued with a sense of urgency. More particularly, detection capacity needs to be extended to the outer solar system,

and a deflection infrastructure needs to be put in place prior to detection of a specific threat. As regards the latter, I note that the planetary defense mantra “Find ’em early” is not enough.

It is curious that the cometary threat has fallen by the wayside, given the great amount of attention comets have garnered historically and even just in the past year. It is also ironic because comets were once superstitiously dreaded as harbingers of some Earthly catastrophe, whereas today we understand that the comets themselves constitute the threat. But whereas the Chelyabinsk meteor/asteroid was universally hailed as a wake-up call, the response to Comet ISON, Comet Siding Spring, and Comet 67P has been entirely in terms of photo-ops and scientific investigation of the origins of life on Earth. Indeed, the logo of this very meeting is, “Planetary Defense Conference: Protecting Earth from Asteroids.”

I assign the root cause of this asymmetrical response to a misplaced emphasis on the rarity of cometary apparitions to the neglect of their randomness. And this too is ironic, given that asteroid impacts are also rare; yet the standard response by the planetary defense community has been that this rarity is compensated for by the magnitude of the possible catastrophe. But is that not also true of cometary impacts?

I therefore call on policymakers and also science journalists and popularizers to correct the imbalance of attention to asteroids over comets and thereby help assure that the objects that may have been responsible for the beginning of life on Earth do not also someday end it.

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