

ASTEROID CONUNDRUM

By Michael Ventura

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In a way, it's old news. Pick up a Bible and turn to Revelations, Chapters VIII and IX: "And something like a great mountain burning with fire was thrown into the sea, and a third of the sea became blood... and many men died... and a great star fell from heaven, burning like a torch... and the sun and air were darkened because of the smoke of the pit." Recently there's been an update. The news is disturbing enough; but what happened to this news is both disturbing and dishonest.

On Thursday, March 12, *The New York Times*, a famously cautious outfit, ran a front-page headline: "Asteroid Is Expected to Make A Pass Close to Earth in 2028." A Dr. Brian G. Marsden, of the Smithsonian (another cautious outfit) "is regarded as one of the world's leading experts in the motions of asteroids and comets." According to him, a mile-wide asteroid, designated XF11, will pass very close to Earth, and possibly hit us, on October 26, 2028. If it hits, the results will be straight out of Revelations: "Tidal waves [hundreds of feet high], *continent-sized fires* [my dismayed italics], and an eruption of dust that could cause global cooling and long-term disruption of agriculture. But Dr. Marsden said such an asteroid impact would not necessarily be severe enough to wipe out the human race."

"Not necessarily." Small comfort. The implication was clear that Asteroid XF11's impact would be more than enough to end technological civilization.

Contrary to later reports, Dr. Marsden and his colleagues had not "cried wolf" at the first sign of trouble. The initial *NY Times* story reported that "astronomers in several countries refined measurements" for two months and concluded that XF11 would come very near. Then on March 3 and 4, a Dr. Peter Shelus of the McDonald Observatory in West Texas "improved calculations of its orbit. On the basis of *overall tracking time of 88 days* [remember that figure, because no further coverage mentions it again] the asteroid was pronounced likely to approach to within barely 30,000 miles." On that basis, chance of an impact with Earth is too close to call. Therefore Marsden "appealed" (a strong word, yes?) for other astronomers to contribute calculations, saying "there is still some uncertainty in the computation." He noted that XF11 would pass reasonably (not dangerously) close on Halloween of 2002, and again in 2008, giving plenty of opportunity for more exact measurements, and leaving at least 20 years before the possible impact date of 2028. That might give us enough time to deflect it.

Reading this, I thought not so much of the consequences of XF11's impact - I don't know how to think about the end of humanity, or even of civilization; no, I thought of what will happen in 2002 if the chance of impact is still thought to be plausible, much less likely. How many young people will still think it worthwhile to go into debt for college so that they can spend the next 10 or 15 years at entry-level positions? How many workers will still put up with dead-end jobs? How many will save money for retirement, or care about investing in stocks? How many, in short, will accept the paradigms that govern us: that acquiring money must be the focus of human effort, and that preparing for the future is the organizing principle of life? And if enough people jettison those premises, in desperation or despair, what will that mean for the economy? For education? For health concerns? Will we still be content with subservience to our bosses at work, or

to authority in general? How will children behave with the possibility of a Biblical-type disaster facing them before their mid-thirties?

What will it mean politically? Will religious fanatics thrive on this and become far more powerful? Will there be secret Pentagon projects to colonize the moon? Who decides who'll go? Not to mention the billions that would be spent trying to deflect the asteroid - a reorganization of economic priorities on a scale hard to imagine. For *nothing* will be considered as important, no sacrifice will seem too great. Funding for anything considered "non-essential" - the arts, or care for the elderly - will vanish. (The young, no longer certain of the privilege of growing old, may want to keep that money for themselves or divert it to repelling XF11.)

And how will the older among us feel, living in the great grief that no young person we love may make it to middle-age? Or that the result of our life's work, no matter how well we do it, may be extinguished forever?

I wasn't the only one imagining the consequences of such a fundamental shift. Our government and the news industry were way ahead of me. What happened to the asteroid proves that the authorities view XF11, and the paradigm shifts that could come with it, less as a threat to Earth than as a threat to their authority.

By mid-day, CNN was in front of the White House interviewing a man identified as the president's "science advisor." This, in itself, is significant. The man had been called to the White House pronto. Someone was worried. With only a few hours to examine the data, he smilingly said there was nothing to it. Then the Jet Propulsion Lab chimed in: No, the asteroid will come no closer than 54,000 miles to Earth - still close, but less chance of impact. Not two *hours later*, they changed their minds (54,000 miles is still dangerously close), and said that there was absolutely no chance that XF11 would get any closer than 600,000 miles. Everything's alright.

In time for the evening news, a Dr. Donald K. Yoemans said, "Working from the same observations used by Dr. Marsden, we concluded... that the likelihood of the asteroid hitting the Earth is effectively zero." Before dark, a Dr. Eleanor Helin (also of the Jet Propulsion Lab) said she'd discovered photographs taken of XF11 on its last (far-off) pass in 1990, and with those photographs it was possible to calculate that the chance of a future impact was zero. (Do you think it's significant that these photographs were not reproduced in any major newspaper or magazine?)

By evening, Dr. Marsden was being accused on the networks of "crying wolf." It went unmentioned that Dr. Marsden and his colleagues had been concentrating on their calculations for three *months* before they broke the story. The other scientists who spoke that day had calculated for only a matter of hours. But the news industry and the government thought this sufficient to tell us that everything's fine.

All that night, and the next day, the major news outlets reported that it was all a false alarm. (Except for some, like *The Los Angeles Times*, which didn't cover the story at all. Not a single word!) Of the papers I scanned, only *The New York Times* made special note that Dr. Marsden wasn't seriously revising his estimate: "I would agree that the probability of impact seems [catch that *seems*] smaller than it did... *but it is not zero.*" [My italics.]

He added: "Even if its present trajectory is capable of carrying it safely past the Earth, any small perturbation could put it back on Earth's track. The asteroid might be diverted toward Earth by gravitational interaction with another asteroid, for example." (Remember that until the previous afternoon, Dr. Marsden had been considered a prime world authority on astronomical trajectories.)

In other words, Marsden backed off. But he didn't back down.

This distinction was ignored when *Time* and *Newsweek* went to press that weekend. *Time's* headline, in gigantic letters, was: "WHEW!" *Newsweek's* : "Never Mind." Both magazines called the whole thing a certified false alarm. Neither quoted Marsden's response to the hoopla, which bears repeating: "I would agree that the probability of response *seems* (my italics) smaller... but it is not zero." No one thought it suspicious that the Jet Propulsion Lab released two wildly different figures (54,000 and 600,000) within two hours of each other. *Everyone* chose to believe the half-day's frantic work of the Jet Propulsion Lab over the three months' work of the Smithsonian. And no one mentioned that *all* these scientists are directly employed by the government. (Which makes me admire Dr. Marsden's integrity all the more, while being even more suspicious of the others' swift reassuring calculations.)

Fast forward one week later, to an item tucked into page 17 of *The New York Times*, March 20: "After Asteroid Episode, Scientists Agree to Agree." A meeting of 15 astronomers had been called in Houston (home of NASA), apparently in a rush. It included Dr. Yoemans (zero probability) and Dr. Marsden (it's not zero). The story neglected to mention who had the authority to call such a meeting. The 15 "agreed [or were ordered?] to form a committee that will use its expertise to calculate the risks to Earth when an asteroid looks like a threat." *I.e., no authoritative American source will be allowed to speak of XF11 independently in 2002 or 2008.* The announcements will come from the committee's consensus. Dr. Yoemans said, "This *group* [my emphasis] will be charged with assessing the threat." Dr. Marsden: The whole thing has "left a nasty taste in my mouth."

But he still hasn't backed down. Still hasn't recanted the results of his three months of calculations. And, committee or no committee, XF11 is still out there.

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