

ASTRONOMY

Scientists working to defend Earth from asteroid bullies

Tuesday, June 20, 2006

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Remember Mongo, from the Mel Brooks movie *Blazing Saddles*? He rides into town on a bull and punches out a guy's horse. The sheriff pulls out his gun, but Gene Wilder's character stops him. "No, don't shoot him," he says, "you'll just make him mad."

It's good to remember Mongo when thinking about the risk of asteroids hitting Earth.

Asteroids aren't dangerous unless their orbits around the sun intersect with Earth's. Even then there's no problem, unless Earth and asteroid happen to arrive at that intersection at exactly the same time.

Asteroid impacts have happened many times in Earth's past. I wrote last month that the chances of a catastrophic impact during your lifetime are about the same as the chance that a commercial airline flight will crash, about 1 in 20 million.

Actually, I was wrong. The chances of an asteroid impact are quite a bit higher. In fact, if you take about 100 plane trips during your life, you have about equal chances of eventually being expunged by plane crash or asteroid.

I have to thank my old friend Ed Lu for catching my gaffe. Ed is a NASA astronaut who has flown in space three times, and one of a growing number of scientists and engineers developing strategies for nudging asteroids away from dangerous situations.

Subtlety is the key. Most asteroids aren't solid rocks, but "rubble piles."

This is why the one thing you don't do to a threatening asteroid is shoot it. You'll just turn one big rock heading at you into lots of slightly smaller rocks heading at you.

There are many suggestions for how we might nudge an asteroid just enough to avoid a collision. One of the latest comes from Ed and his colleague Stanley Love.

They suggest that a 20-ton, unmanned spacecraft could be "parked" next to an asteroid, providing enough of a gravitational pull on it to do the job — if it has a few years to work.

This imaginative plan highlights how important it is to understand Earth's environment in space. Our interactions with the rest of the universe might be infrequent, but when they happen, they can be literally Earth-shaking.

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