

Re: Just when you thought the religious right couldn't get any sillier (or scarier)

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 - *Date:* 14 Sep 2005 08:43:06 -0700
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I am going to have just a little astronomical interest in this posting. The classic statement on chaos, and also of the causation of hurricanes, is that they are caused by butterflies in Japan. They could be caused by gays (and straights) heaving up and down.

What is chaos. Imagine you are trying to balance a pencil on its point, theoretically you can but if you get the pivot point right to even 100 places of decimals it will still fall in an unpredictable direction. We can look at a more complicated dynamical system and construct equations in matrix form. If we then proceed to compute the modes of vibration we will find we get some positive eigenvalues and some negative. This means that we have an eigenvalue that will grow exponentially one it is present to even the smallest extent.

Meteorology and fluid flow in general is about unstable systems. If we know an unstable system to a high degree of accuracy we can make predictions and small forces can be used to control the situation.

Cassini first went to Venus, to Venus again, then back to Earth to Jupiter and finally on to Saturn. This is because it did not have enough energy to reach Saturn on a simple launch from Earth. VVEJS is unstable in the extreme. Theoretically you can launch from Earth making no corrections, but you would need precision of less than a micron per second. In fact rocket power of a few m/s is needed for mid course corrections. Cassini is thus an example of chaos control. Can we extend this principle?

Yes we know that the course correction needed in Earth crossing asteroids depends on an early determination of the orbit. 1mm per sec precision and that is what you will need to ensure missing Earth.

Suppose we use a space based laser to measure wind speeds over a large area to round about 1mm per sec. On feeding those into a supercomputer we have the beginnings of a hurricane. If we now make a small modification. Say we make an oil slick (refined oil with controlled evaporation conditions) we now have the beginnings of an effective control mechanism.

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I would also like to query whether the Baptist, so called, Church is Christian. Christ Himself expressly denied that there was any connection. Followers of Christ should listen to what He said.

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