This is the second in a short series of homilies on the lessons we can learn from climate change.

Donald Rumsfeld famously distinguished between knowns, known unknowns, and unknown unknowns.   He didn't take the occasion to provide sharp analytical distinctions, but the difference between known unknowns and unknown unknowns is very much like a difference drawn by some economists between risk (which can be reasonably quantified) and uncertainty (which can't be).

In terms of climate change, we now have a good fix on the lower end of the risk spectrum (which is serious enough, by the way). But the upper end of the spectrum is terra incognito, with large differences between models. Even worse, there are threats that we are not yet able to model, such as large-scale ice movements that might result in sea level rise. These are the unknown unknowns, and they provide a strong argument for a precautionary policy.

But unknown unknowns aren't limited to climate change. Our ability to model ecosystems is also weak, which is one reason we have so much trouble regulating fisheries. There are also surprising gaps in our knowledge of toxic chemicals, the health effects of air pollutants, and nuclear waste disposal. The biggest mistake we could make is to ignore potential harms just because we can't pin them down quantitatively. What you don't know can bit you in the . . . derriere.