

## Top Ten Signs Your Astronomy Professor May Be Nuts (based on Lee Carkner List)



- 10) The title of every lecture is: "Man, Them Stars is Hot!".
- 9) His so called "telescopes" are really just paper towel rolls covered in aluminum foil.
- 8) To illustrate the vastness of the universe, he makes everybody walk to Springfield.
- 7) Thinks he's married to the slide remote.
- 6) Your grade is based entirely on how many ping-pong balls you can fit in your mouth.
- 5) His so-called Drake Equation video is really just an old episode of Alf.
- 4) He makes everyone wear a soup pot on their head to protect the class from "Klingon mind control lasers".
- 3) About 90% of all classes involve dressing monkeys up to look like Isaac Newton.
- 2) When you go to his office hours, he is always hiding under the desk so that the "space squirrels" can't get him.
- 1) The only observing advice he ever gives is, "Keep an eye out for the mothership."

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## Astronomy 330



This class (Lecture 22):

Lifetime

**Mark Mazzone**

**Andrew Xie**

Next Class:

Communication

**Rough Drafts due on the 10<sup>th</sup>!!**

*Music: It's the End of the World as We Know It – R.E.M.*

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## HW 6



- **Steven:** <http://www.alienseekernews.com/writers/patrick-cooke/articles/cattle-mutilations.html>
- **Kyla:** <http://www.newfrontier.com/2/cropcirc.htm>

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## Presentations



- **Mark Mazzone :**  
[Top 8 Ways to End Life on Earth](#)
- **Andrew Xie :** [The Hubble Space Telescope](#)

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## Big Questions for $f_c$



- Our capacity for interstellar communication arose at the same time as our interest in it. Coincidence?
- Can a society have a highly developed technology with an incorrect astronomy?
- What if the skies were constantly cloudy?
- What if their solar system had no other planets?
- What if they lived in a molecular cloud?
- What if they lived in a huge cluster of galaxies?

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## $f_c$ Your Guess!



- Given that an intelligent civilization exists, what is the likelihood that it can (technologically advanced) and will want to (knows astronomy and thinks that its chances are good) communicate?
- Cultural evolution to **technology** and **worldview** are essential components of  $f_c$ 
  - Extra-somatic storage of info crucial.
  - Technology and innovation– quantum mechanics
  - Copernican revolution played an important role.
  - ET has to realize that they are not the center of the Universe and that there might be other life.
- Are we typical?

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## $f_c$ Development



- Are we typical?
- Is it inevitable  $f_c = 100\%$  or a fluke 1/10000?
- Remember civilizations come and go, but in general the gains (technology/worldview) aren't lost.
- Picked up by the next civilization.
- Even if one civilization goes dark for centuries, eventually another rekindles the technology/worldview.

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## Lifetime of Civilization



- If a civilization can communicate with other life forms, and wants to, how long can it last?
- This factor pulls a lot of weight in the Drake equation. Are we alone or are there aliens everywhere?
- Easy to envision 4 cases:
  1. Communication efforts stop. Bored with lack of success or funding issues.
  2. Civilization evolves away from interest or capability. But empires rise and fall.
  3. Technological civilization collapses: exhaustion of resources and population growth,
  4. Catastrophe! Nuclear war or various natural problems.

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# Issues



- The last 2 items:
  - Technological civilization collapses
  - Catastrophe
- Could be caused by:
  - Resource Exhaustion
  - Population growth
  - Nuclear war
  - Natural catastrophe

**Hiroshima**



<http://gawain.membrane.com/hew/japan/Hirosh.html>