Astronomy, Medicine, and the Future

Alyssa A. Goodman
Harvard-Smithsonian Center for Astrophysics

Astronomy and medical imaging are both forms of non-invasive remote sensing. Unlike in Medicine, where "non-invasive" and "remote" are good things, in Astronomy, we can’t go most places of interest, even if we wanted to. Thus, Astronomers have, for a very long time, been forced to deal with piecing together pieces of scientific puzzles from information that’s typically missing at least one dimension (often distance, sometimes time). In this talk, I will briefly review the history of visualization in Astronomy, focusing on the interplay between the human cognitive system and our ability to carry out ever-more-sophisticated calculations. I will also show how Astronomy and modern Medical Imaging offer very similar challenges and opportunities when it comes to extracting meaning from high-dimensional data sets. I will highlight the use of new software tools such as WorldWide Telescope (worldwidetelescope.org) and Glue (glueviz.org), in meeting those challenges, and I will conclude by discussing why 3D selection is an important, but as-yet-unmet, challenge, in the hopes of inspiring an audience member to work (harder) on it!