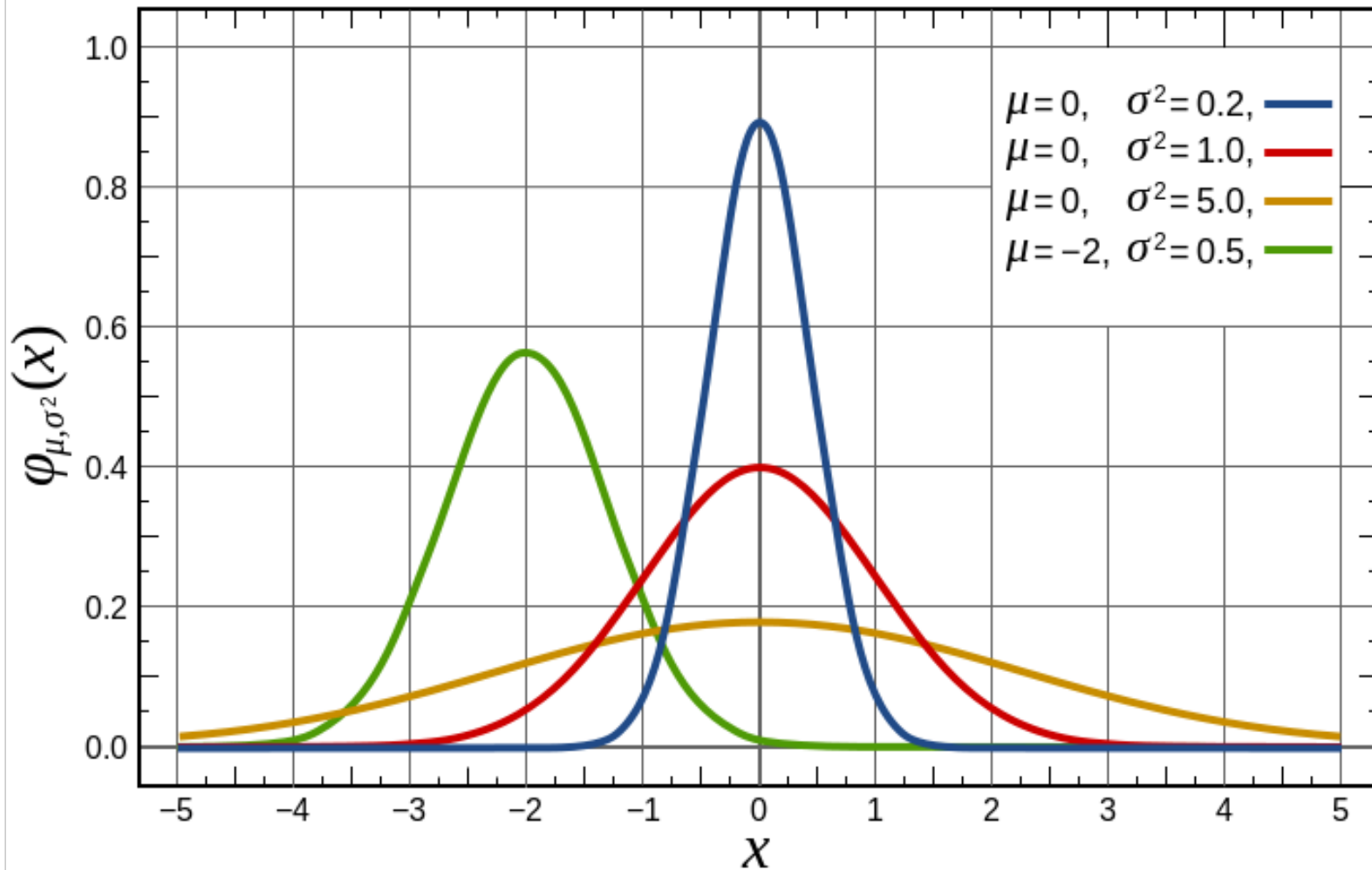


Heavy-tailed Distributions

Oct 16th 2012

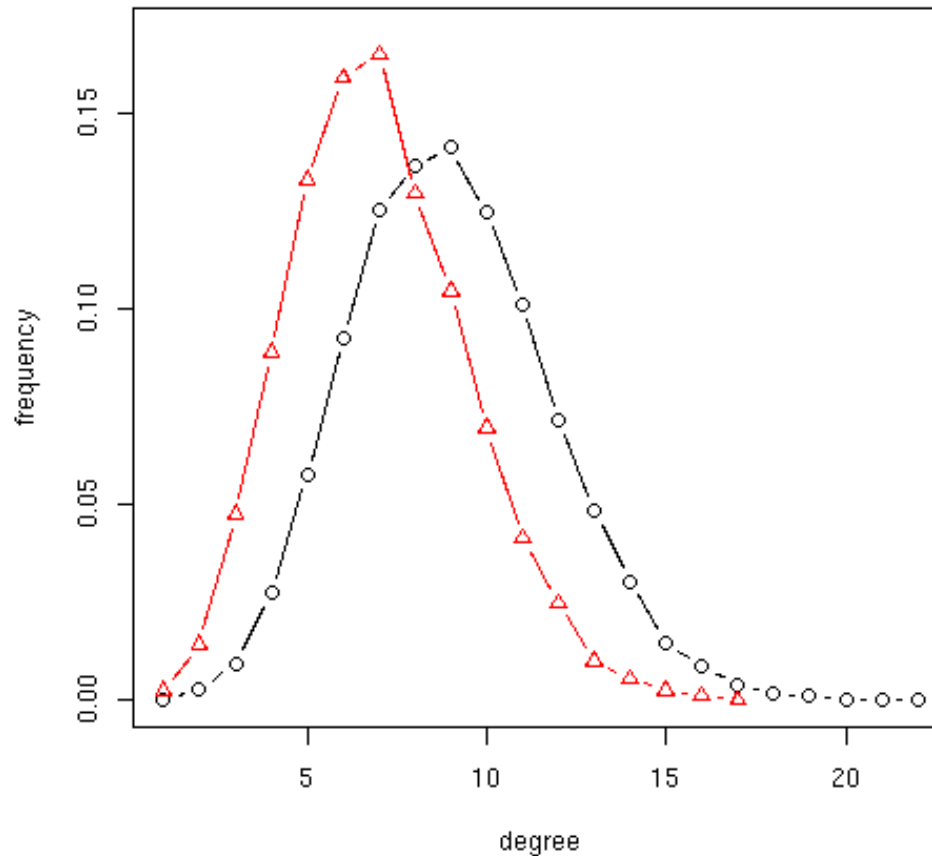
Bell Curves (Normal Distribution)



Examples of Normal Distributions

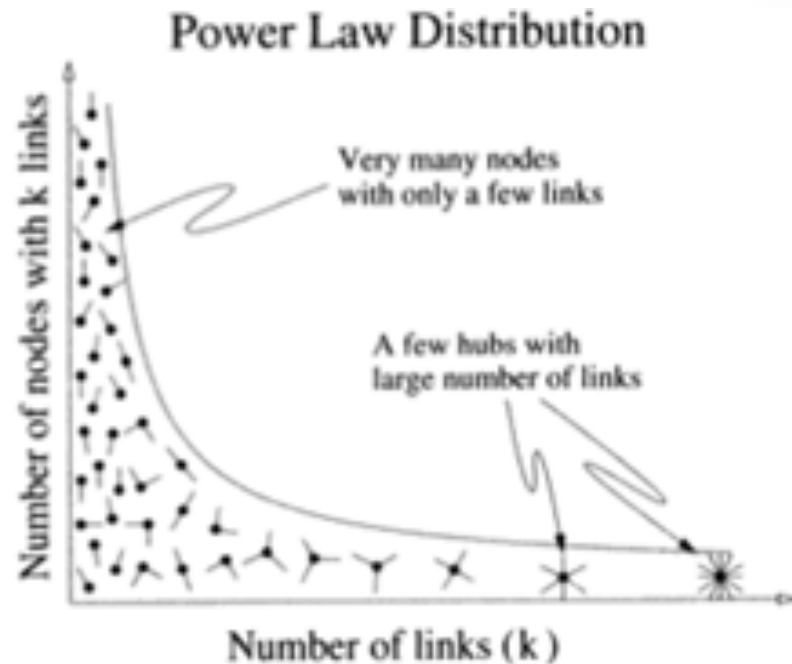
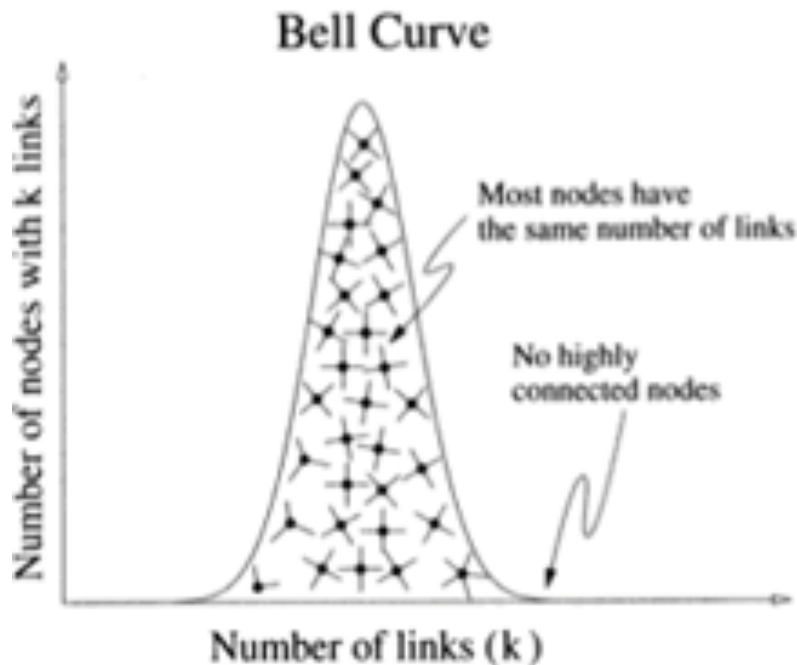
- Human heights
- Test scores on standardized tests (Think SAT, ACT)
- Sales receipts in a grocery store

One more example

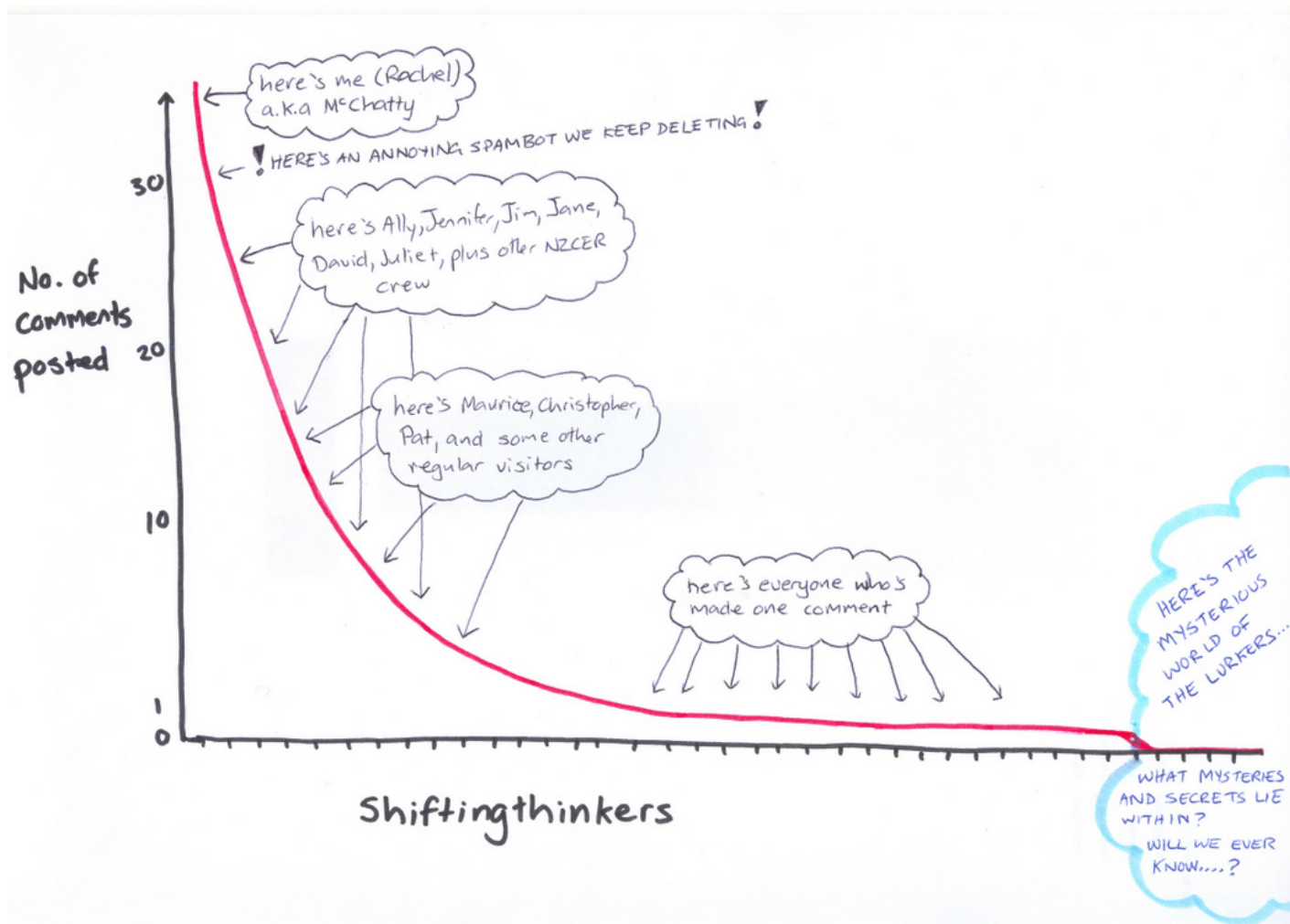


Degree distribution of Erdos-Renyi random graphs.

But, what about “real-world” networks?



Distribution of comments on a blog



Heavy-tailed distributions

- These are also called *fat-tailed* or *long-tailed* distributions.
- These comments about the “shape” of the tail are alluding to the fact that there are a fair number of items with a very large value, relative to the mean.
- This is not true for normal (or Gaussian) distributions. In such distributions, almost no item will have a very large value relative to the mean.

Examples of heavy-tailed distributions

- Earthquake sizes
- Populations of cities
- File size distribution on the internet

Distributions that are heavy-tailed

- Power-law distribution
- Log-normal distribution
- Weibull distribution

The most well known distribution among these is the Power-law distribution.