

# CMS/CS/EE 144

## Networks: Structure & Economics

### Administrivia

- 1) No lecture on Friday, and Monday is a holiday  
→ I'll see you next for lecture on next Wednesday.
- 2) HW1 is due Fri.
  - Turn it in using the box outside of my office or by email
  - Solutions will be available outside of my office
  - 3b: Wolfram doesn't provide the ego network any more :(
  - 3a: You only need to show one direction.
- 1) HW1 self-evaluations will be due at Wed lecture (since Monday is a holiday)
- 3) Office hours: Wed/Thu 7-9pm (106 ANB)
- 4) HW2 is out (pick it up by the door) and due next Friday

So far:

Four “universal” properties of networks

- 1) A “giant” connected component
- 2) Small diameter
- 3) Heavy-tailed degree distribution
- 4) High clustering coefficient

We’re trying to understand:

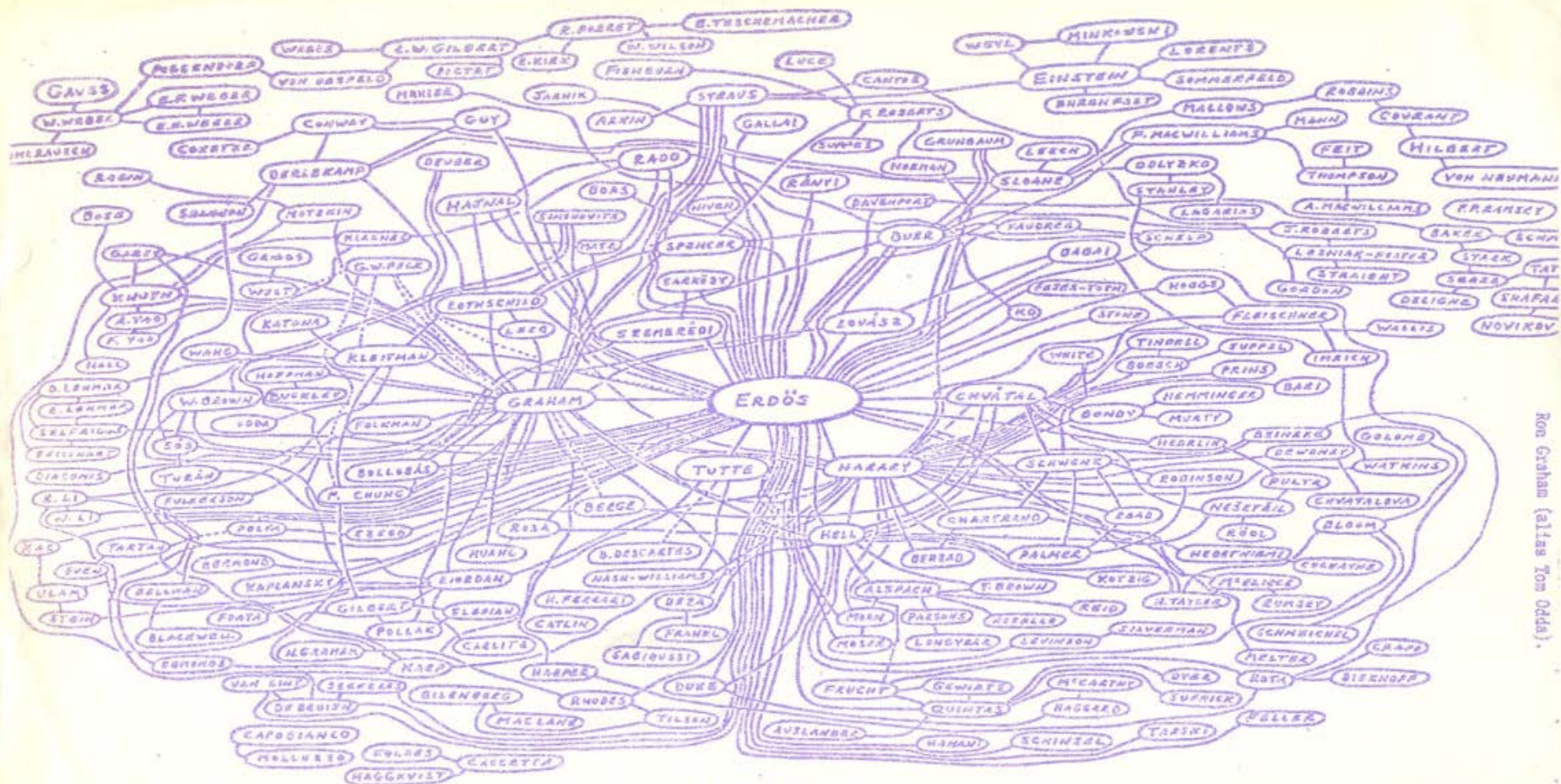
Why are these properties “universal”?

## Lecture 3:

Why is there a giant component?







Ron Graham (alias Tom Oda).



Figure 1  
To appear in Topics in Graph Theory (P. Harary, ed.) New York Academy of Sciences (1979).



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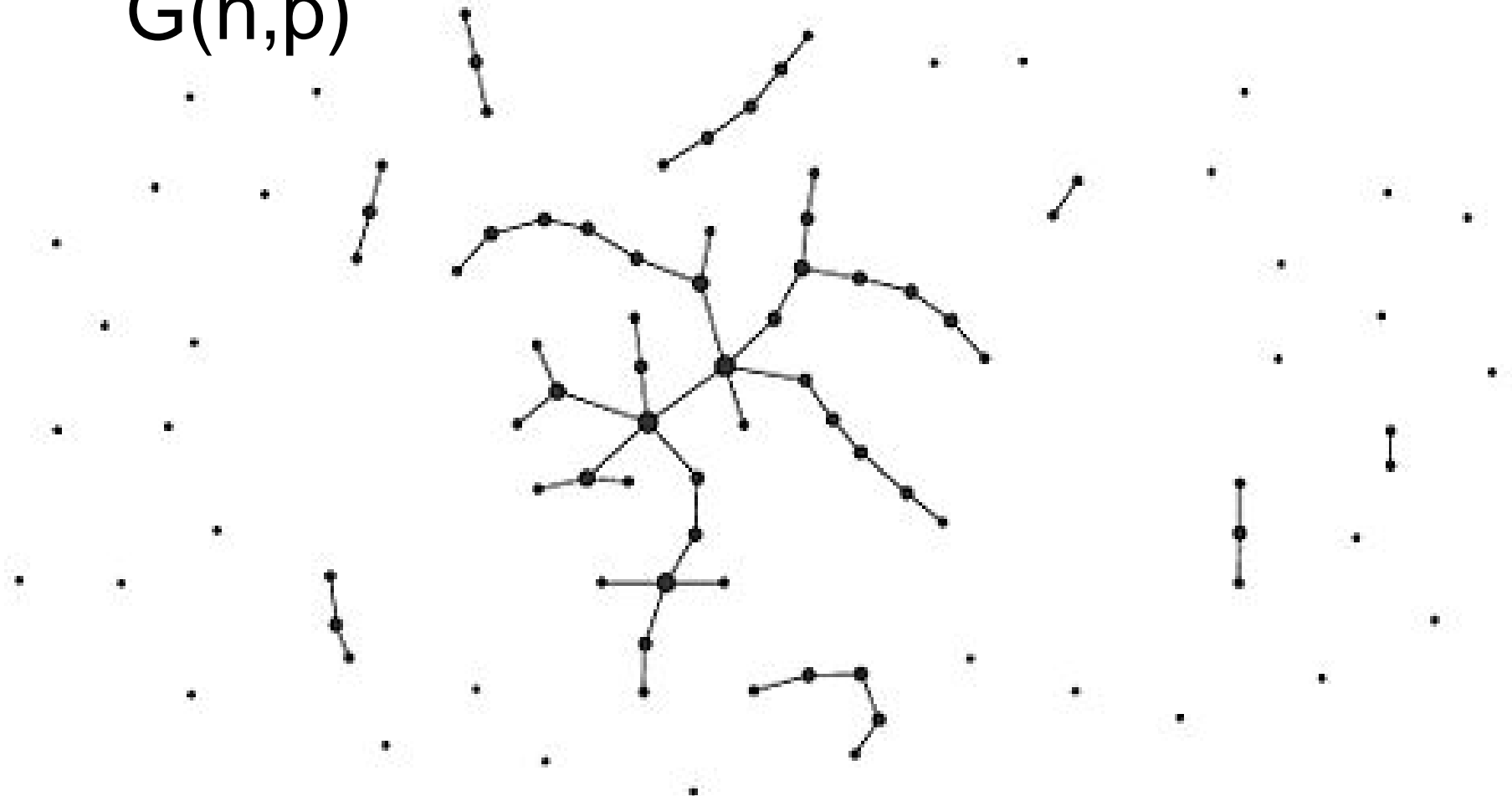
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$G(n,p)$





$$p(n) = 0$$



$$p(n) = 1$$

