# A Long Tale of User Contributed Resources

Politics, Philosophy and Economics of some of my research

http://www.cl.cam.ac.uk/~jac22

# Rant…

- Revolution v. evolution
- Deployable v. scaleable
- Business case v. disruptive

- Hey, we’re on the Mountain of Truth
- But to get there we have to wade through the Valley of Lies….

# Net Value

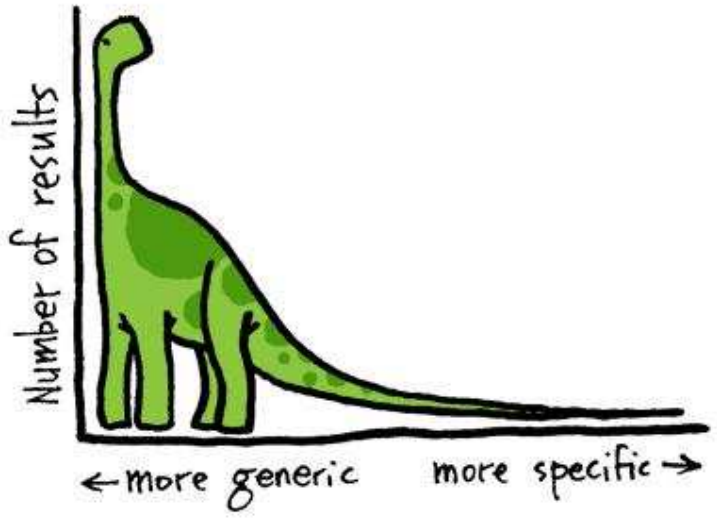
- At any layer, we can maximise the value of the net by removing the provider (disruptive:)
- This applies all the way from content down to links and switches.
- The mere existence of providers with infrastructure tends to non-neutral and monopolistic practice (scaleable)
- I don’t trust governments, either (deployable)

# 1 Dis- and Dat- Intermediation

- Networks connect stuff. Crucially, rare stuff is cheaper (close to free) to get at
- When we used cart and donkeys, it was too expensive to get *rare* stuff
- Now we can not only deliver rare stuff to obscure people/places, we might discover it is interesting, and can be made *commonplace*
- This is the dynamic version of the “long tail” argument - the area under the curve is not fixed for all time.

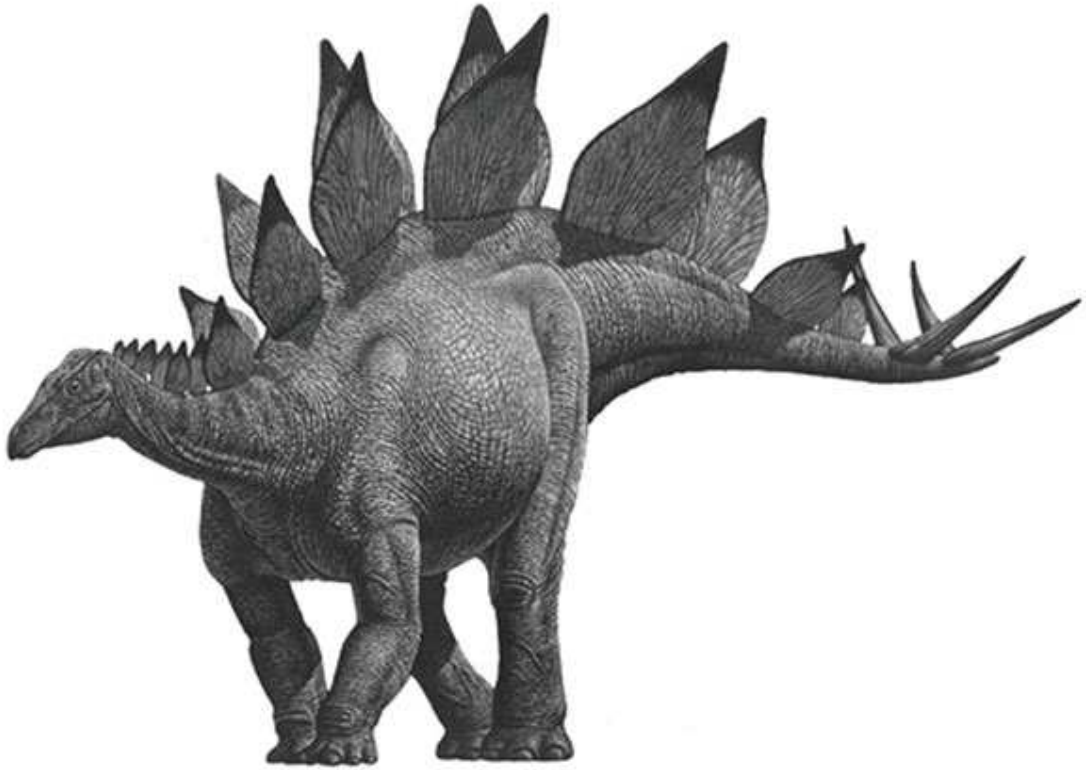
# That long tail

- Zipf or long tail….what's wrong with ths picture?



# Large deviations…

- Real:-



# The zipf+bulk discount…

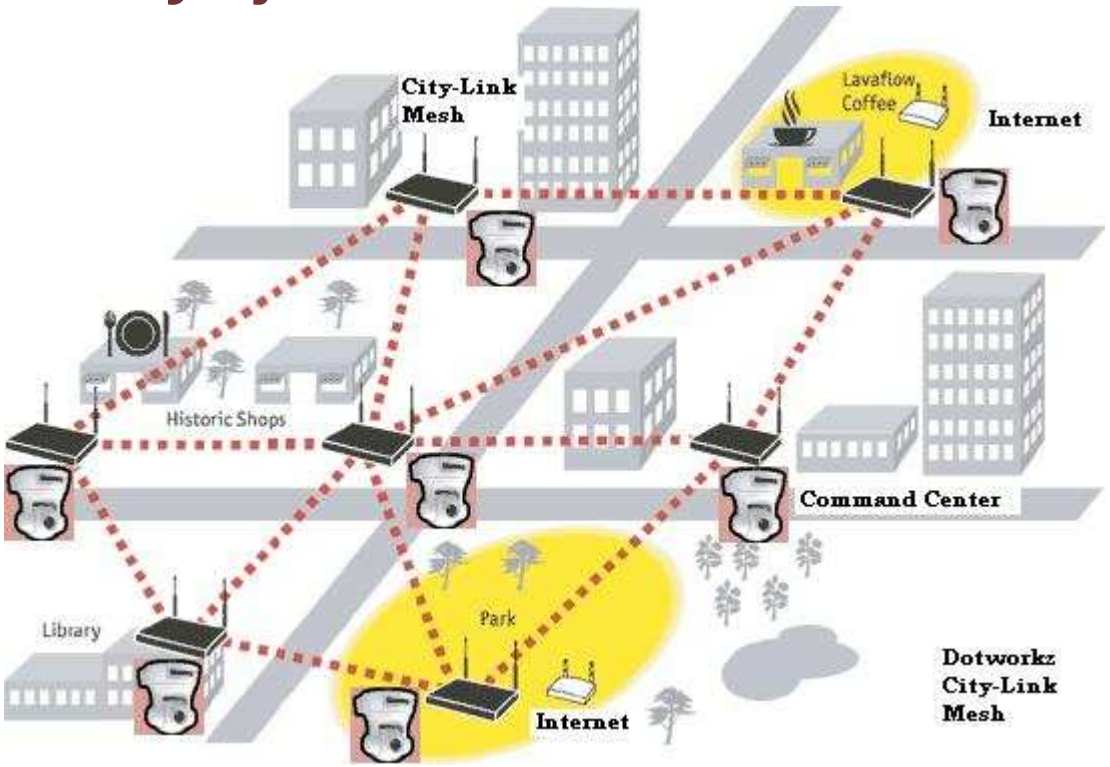
- Is self re-enforcing - but if you allow rare things that have sparse interest to get out there, they may *become* the next big thing
- A question of save on marketing cost
- Put that cost into spare capacity and use the spare capacity for random choice from far down the current tail.

# 2. Providerless next to godliness

- Now we have got rid of market researchers can we get rid of providers?
- Multihop wireless nets appear to be fundamentally limited by capacity of ach receiver (Gupta-Kumar)
- This is not the case if there is any delay tolerance (Grossglauser Tse) - many cooperative relay systems are being analysed that may be practical

# Mesh wifi

- Normally, just wifi AP version of cellular



# Random Heterogeneity to the rescue

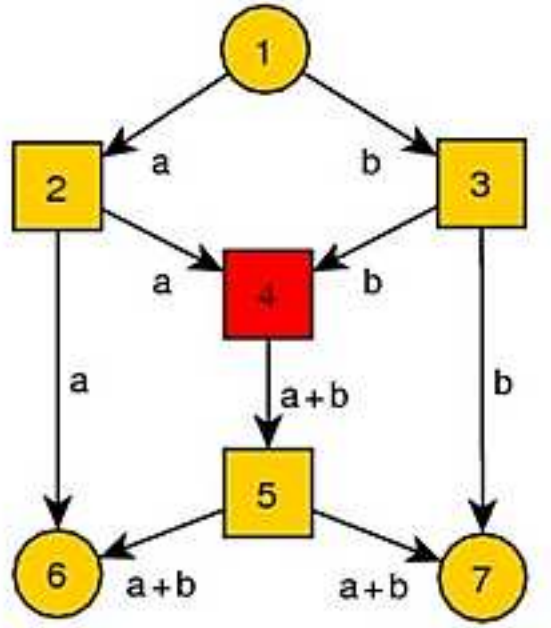
- The popularity model is static- reality is that there are lots of differences and they change with time and location (c.f. buzztraq)
- The mesh model capacity assumes static - reality is nodes move and paths vary and can do coop relay of mixed signal (c.f. Tse, Grossglauser, Leung)

# Diversity

- Receive from prev hop when close, send to next hop when close to that - mobility increase capacity - Grossglauser
- Coop relay - receiver can forward combined signal but separate signal sent direct - generalised by Tse

# Combat interference..

- Node 4 sends combined *signal*



# So a technical agenda…

- …can have a hidden political agenda too
- Can you think of any other examples?
- (e.g. cache replacement policies)