Random networks

The probability that a node has "k" neighbours is given by

$$P(X=k) = \frac{\lambda^k \cdot e^{-\lambda}}{k!}$$ (POISSON DISTRIBUTION)

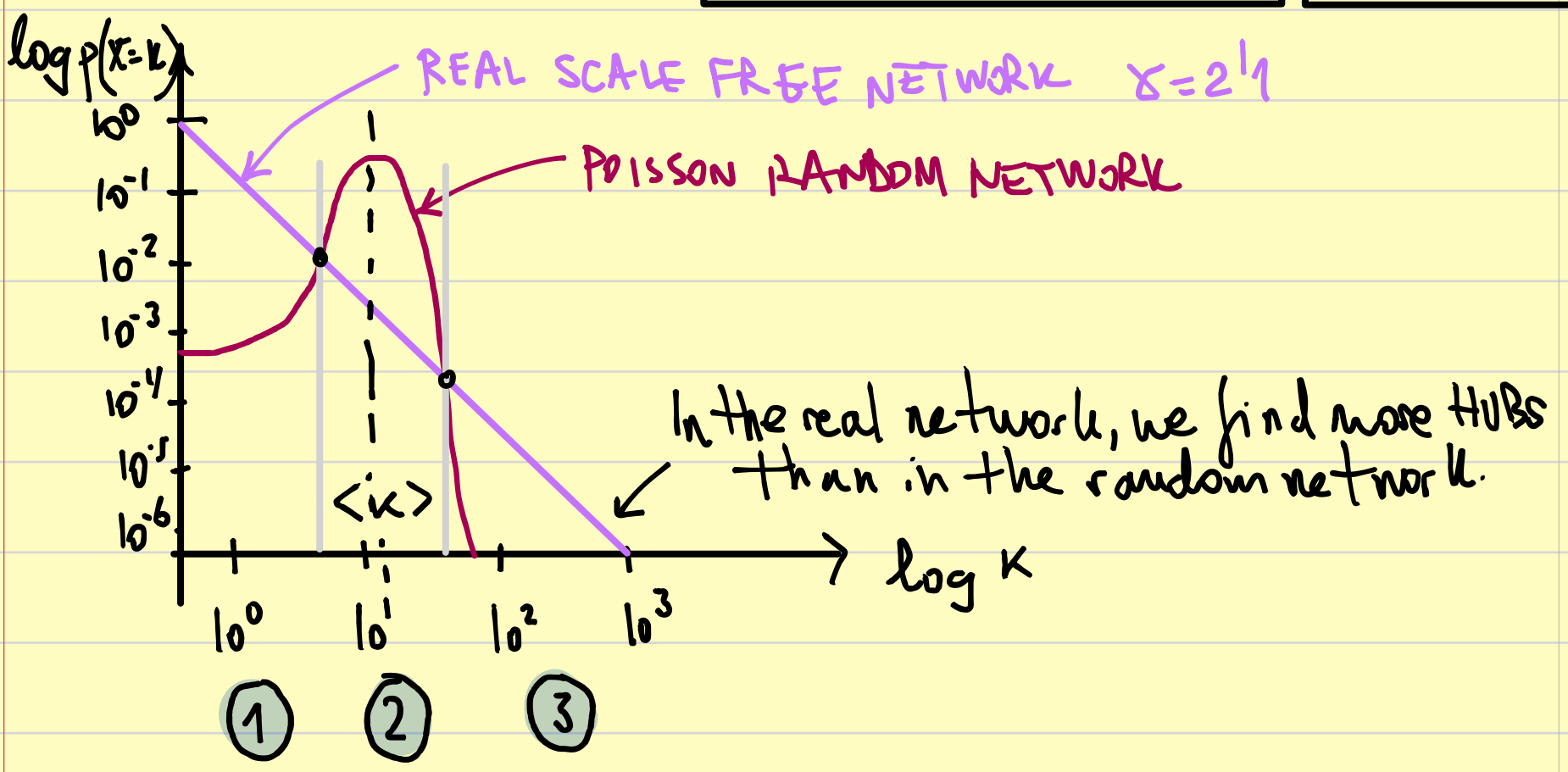
Real networks

The probability that a node has "k" neighbours

$P(X=k) = k^{-\gamma}$ γ = degree exponent

(POWER LAW DISTRIBUTION)

Networks whose degree distribution follows a power law are called SCALE FREE NETWORKS.

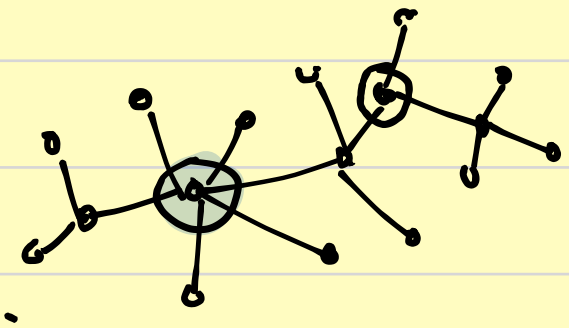


1. The random network has a smaller probability than the real network, for small values of "k" (number of neighbours). This indicates that a SFN (Real) has a larger number of nodes with few neighbours.

2. For degrees (number of neighbours "k") in the area 2, the random network (Poisson distribution) is above the power law, indicating that in the random network, there is an excess of nodes with average degree $\langle k \rangle$.

(3) For degrees k that are large, the power law is above the Poisson curve. This difference is particularly visible in the curve, indicating that the probability of observing a high-degree node, or HUB, is several times bigger in SFN than in random networks.

HUBs. are nodes with many neigbours $k >> 0$.
Can find them in real networks.



The role of the DEGREE EXPONENT γ

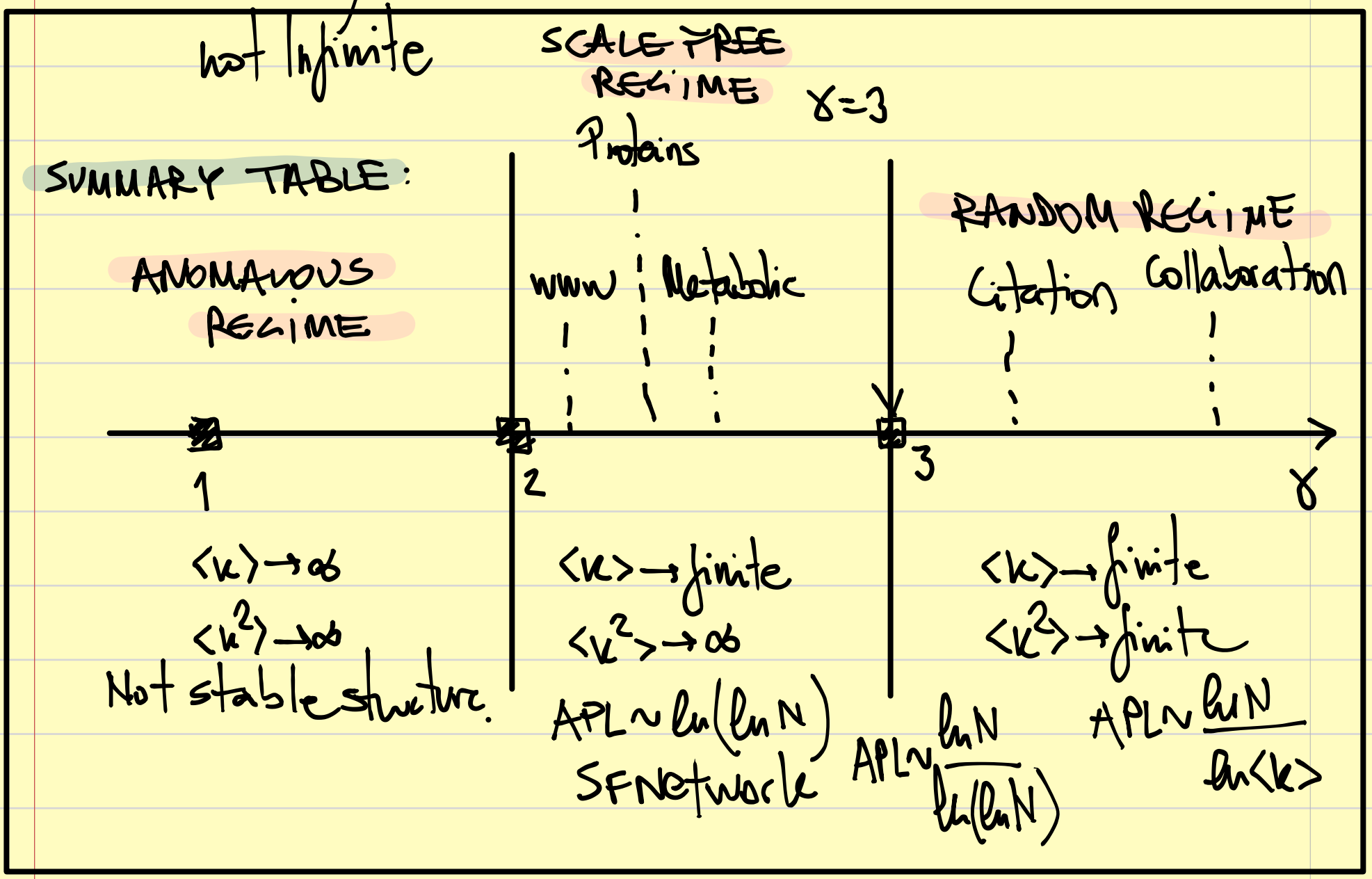
The properties of the SF Network are going to be dependent on γ.

- Almost ALL real networks $\gamma > 2$.
  In networks information transmission takes time & energy.
- If $\gamma \leq 2$ we find an ANOMALOUS REGIME. The number of links connected to the largest hub grows faster than the size of the network. This means that for a sufficiently big network ($N \to \infty$) the degree of the largest hub must exceed the total number of nodes. This means that we will not have enough nodes in the network, so the network breaks down to smaller networks.
- If $2 < \gamma < 3$ we find a SCALE-FREE REGIME. In this regime $\langle k^2 \rangle \to \infty$. As a consequence, organizational dynamics spread without a threshold.

- If $\gamma > 3$ we find a RANDOM REGIME. In this regime

$\langle k \rangle \to$ Finite $\Big\}$ Organizational dynamics are not as

$\langle k^2 \rangle \to$ Finite $\Big\}$ robust as in SFN.



Agile Project Management

What is agile? Is a project management method that uses short development cycles called "sprints" to focus on continuous improvement in the project/process/product.

12 keys of Agile Projects:

① Customer satisfaction. Always the highest priority.
Focus on reducing Lead Time.

② Flexibility. Changing environments/conditions are welcome to provide the customer with competitive advantage.
Focus on EPEI (Every Part every Interval).

③ Frequent Delivery. We want our service to be delivered on demand with frequent delivery.
Focus on Turn Over Rate.

④ Collaboration within Network.
Focus APL and CC.

⑤ Leadership Framework. All teammembers remain motivated for optimal project outcome.
Focus TRUST.

⑥ face 2 Face Meetings.
Meet people in person >  > @
(Online)

⑦ Success. Definition: means that the product works for the customer.

⑧ Sustainability. Sustain-able development is accomplished through agile processes whereby development teams & stakeholders are able to maintain constant pace.

(9) Exællence. "The next five minutes"

(10) Simplicity of desing. "kiss"

(11) Self organizing teams. SCALE ~~FREE~~

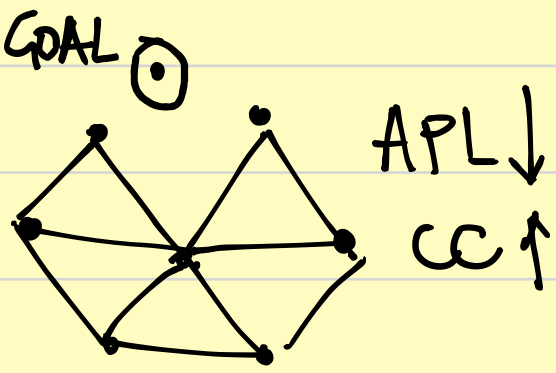
$APL \sim \ln(\ln N)$

(12) Regular intervals of communication through Shopfloor Management.

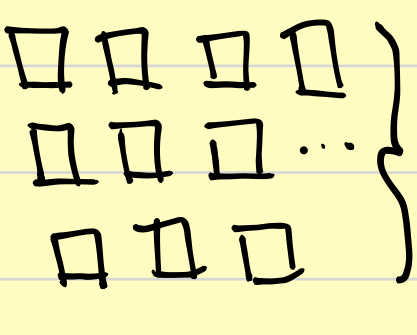
i.e. $(CPD)_n A + (DCP)_n A$

Roadmap for Agile Project Management

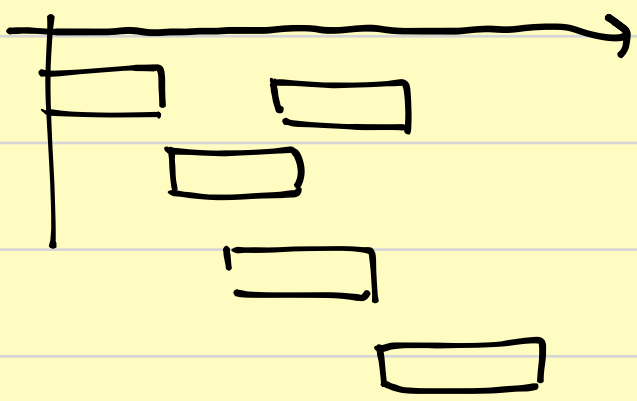
(1) Create the team



(2) Project Backlog



(3) Timeframe



(4) Sprint. Backlog

short cycles review the progress

$(CPD)_n A$ or $(DCP)_n A$

5 Iteration loops every time intervals depending on the hierarchical level. Shopfloor Management

6 Standardize through Best Practice Sharing. (ACT Part of the (PD)nA or (DCP)nA.

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