

a) Data analysis:

Revealing collective phenomena

b) Modeling

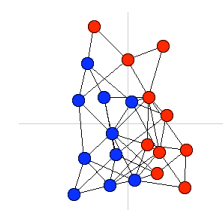
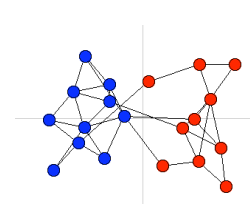
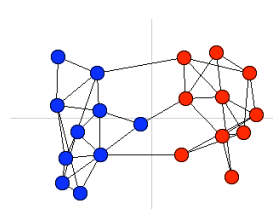
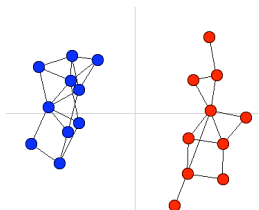
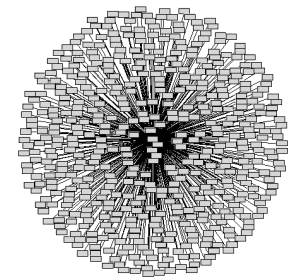
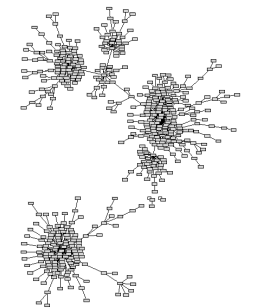
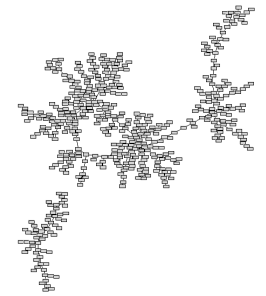
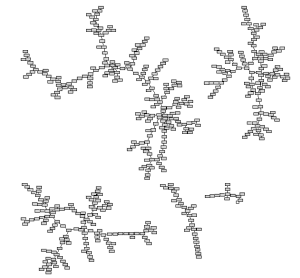
Modeling growing social networks

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a) Data sources

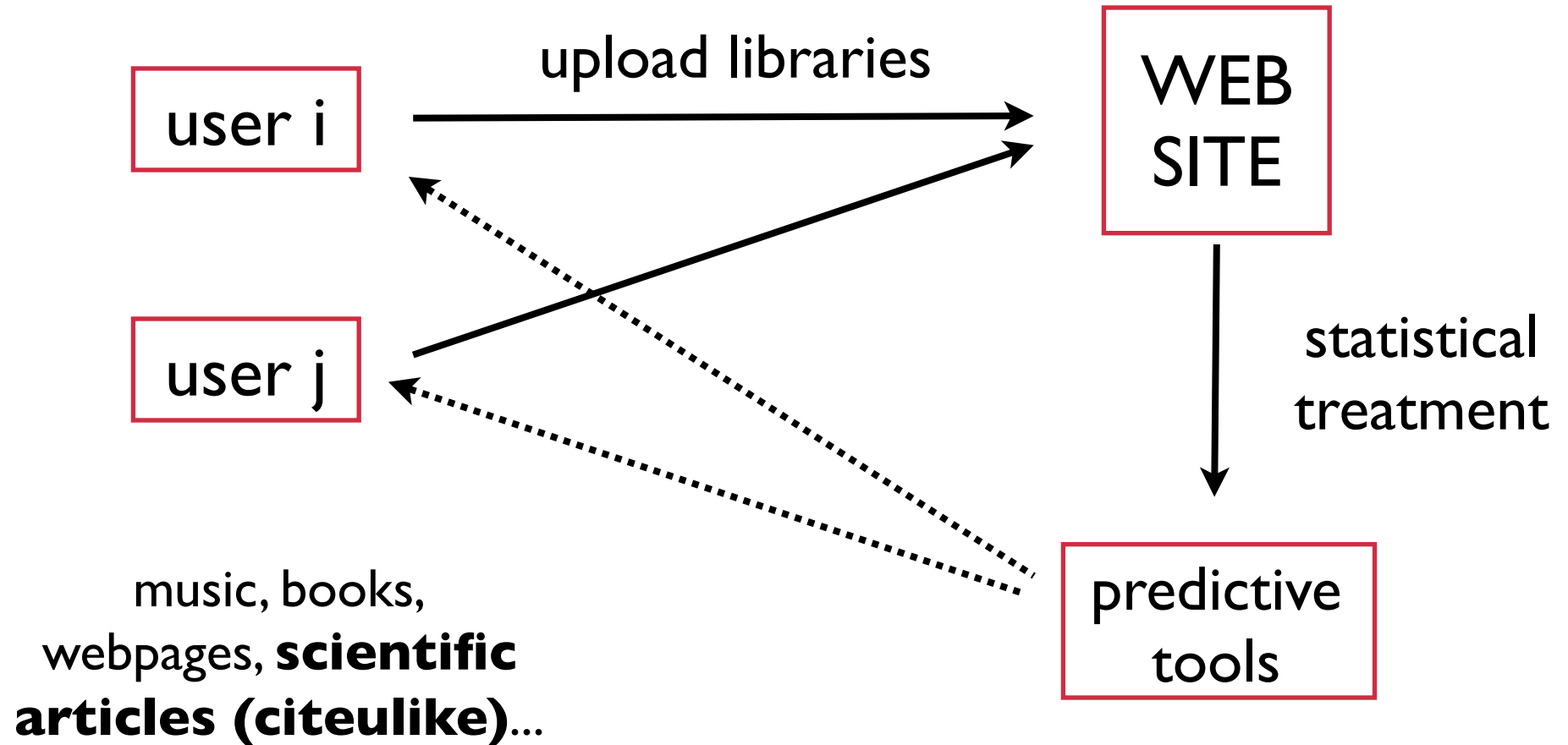
- Citation and collaboration networks (ISI Web Of Knowledge, Arxivs...)
- Trend in Blog dynamics (with the help of Wolverhampton)
- Amazon sales
- Collaborative websites

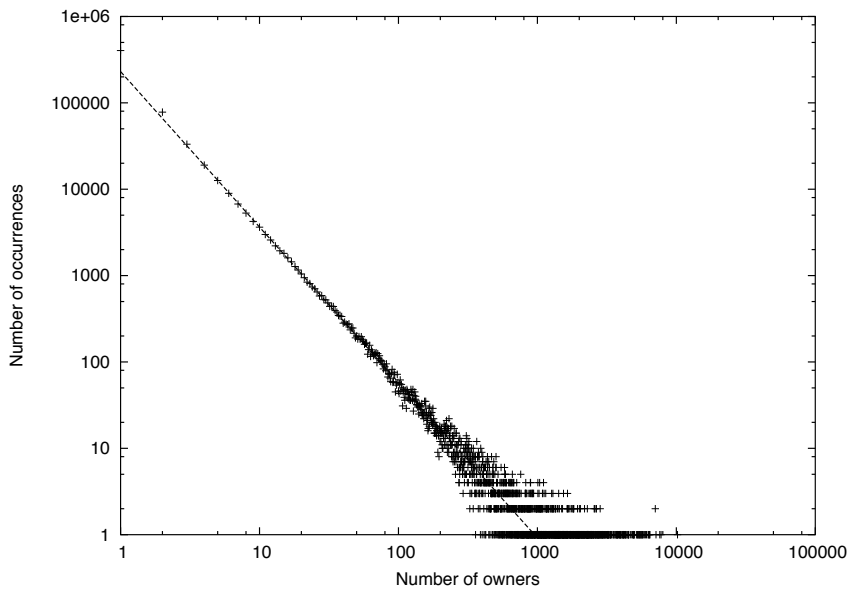


Hype of social networking

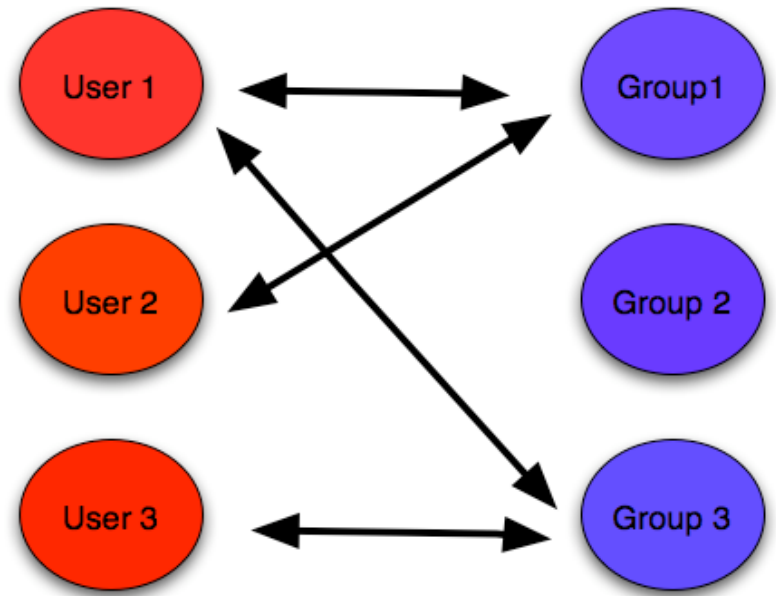
flicker, myspace, audioscrobbler, ...

Exemple: collaborative websites

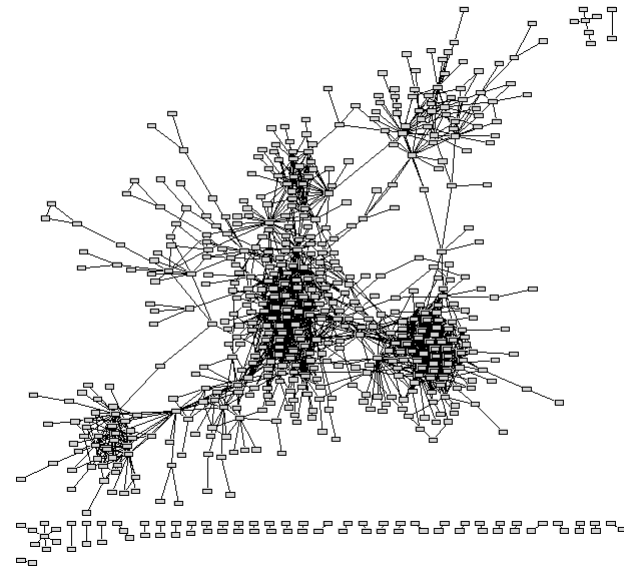




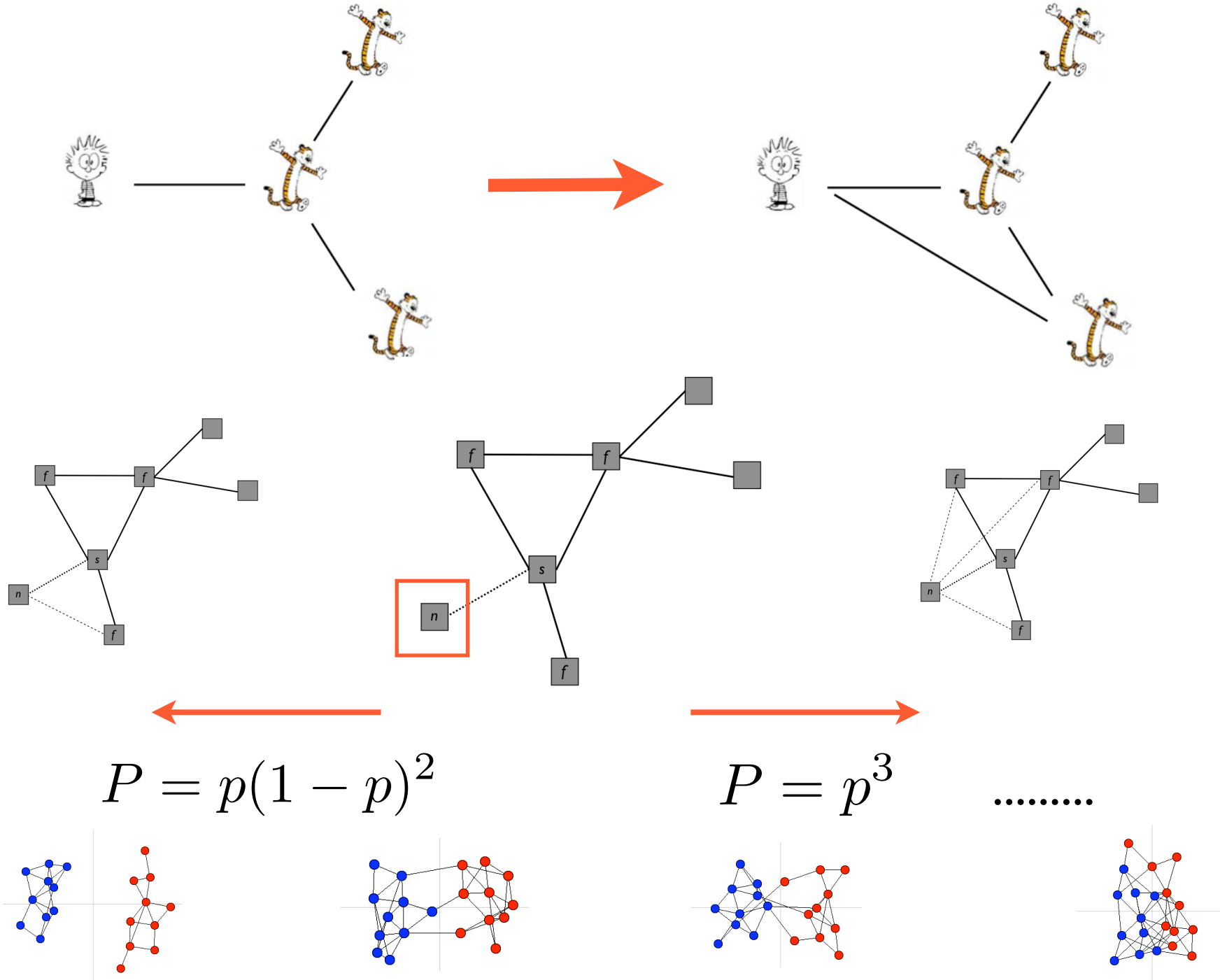
Distribution of the number of listeners per group.



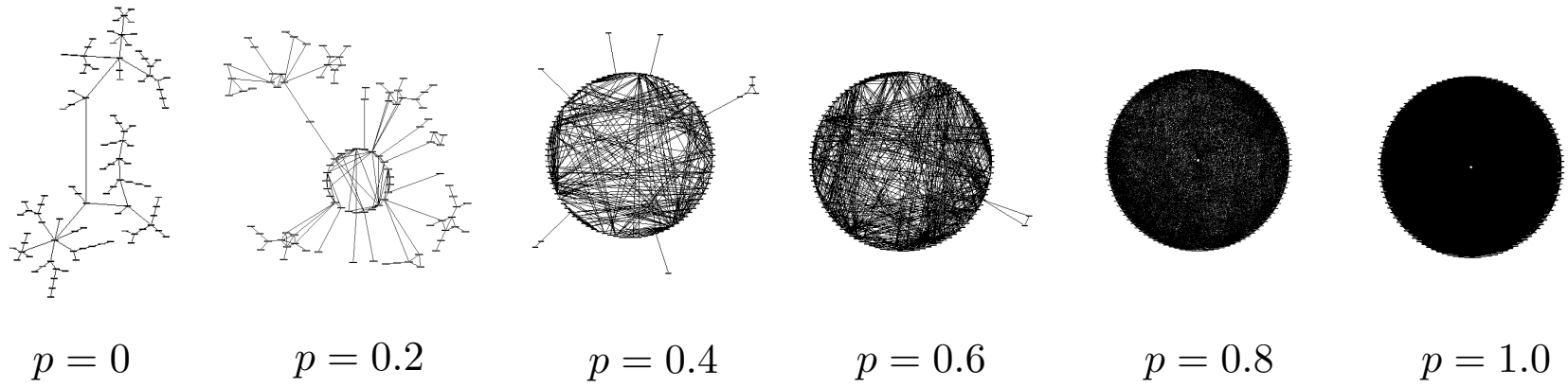
By comparing the audiences of the groups, one can build a network of music groups



b) Modeling growing social networks

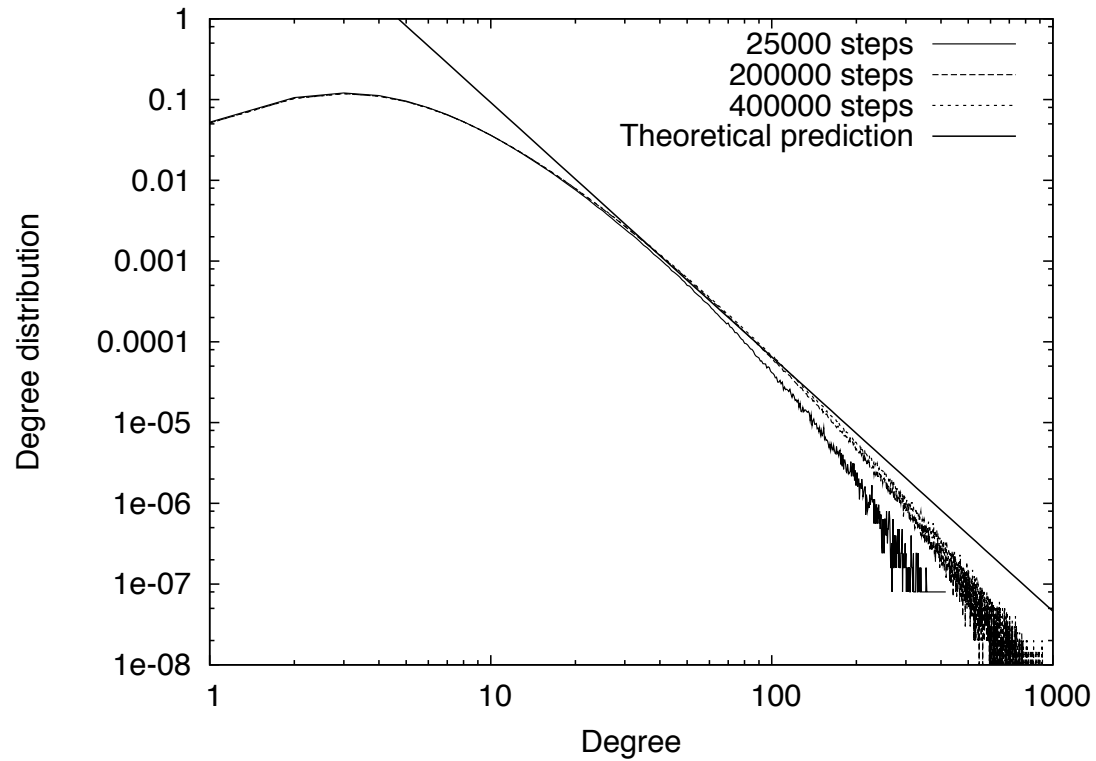


The network structure has been studied by looking at the average number of complete sub-graphs in the network



	Sparse phase	$L(N) = (1 - 2p)^{-1} N$	Dense phase	$L(N) = A(p) N^{2p}$
	$T(N) \sim L(N)$		$T(N) \sim L(N)^{\frac{3p^2}{2p}}$	
	$Q(N) \sim T(N)$		$Q(N) \sim T(N)^{\frac{4p^3}{3p^2}}$	
	$M_m \sim M_{m-1}$... with transitions at $p_C = 1 - \frac{1}{m}$	





When $p < 1/2$, the asymptotic solution is stationary:

$$n_k \sim k^{-\gamma} \quad \text{as } k \gg 1$$

Small world behaviour:

$$d \sim 2(1 - p) \ln N$$

