Universal power law scaling of self-organized networks

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Overview: We examined the relationship between the connection density (d) and the network size (N) of 47 self-organized networks of various types (biological, information, technological, and social).

N: Network size = Number of nodes
m: Number of edges
K: Mean node degree = 2m/N

Connection density vs. network size
Inversely related following a power-law relationship.

Mean degree vs. network size
The mean degree (K) does not exhibit any dependence on the network size (N).

Distribution of mean degree
Although the mean degree (K) generally exceeds the percolation threshold K=1, it is unusual for a self-organized network to have an extremely large K (>100).

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