

**Forecasting the new economy
paper delivered at the Russian academy of
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<http://www.robindcmatthews.com>
<http://www.tcib.org.uk/about.html>
<http://kpp-russia.ru>

Summary:

New dynamics

- **inter dependence in the world**
 - the inertia of habitual ways of thinking
- **Models of the world become the reality**
- **The metaphor of networks**
 - Their default state: small worlds
- **Relationships**
 - scale free → fractal → fat tailed distribution → risk
- **Policy**

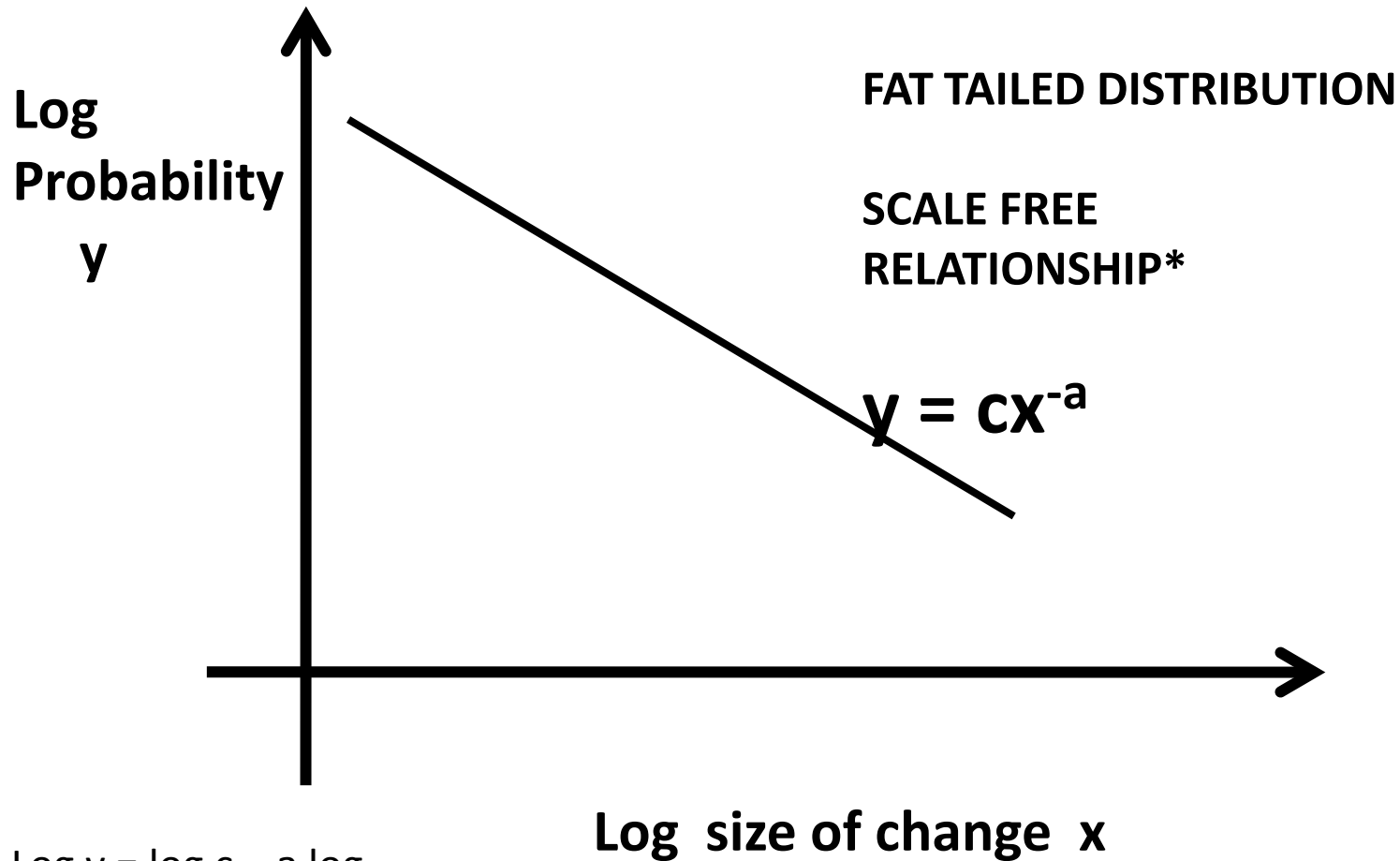
INTERDEPENDENCE

Economy and politics

- State of the world economy
 - TBTF TBTBO
 - Systemic risk
- Paradoxes policy
 - Excess supply
 - Currency wars
- Ecology
- Emerging nations and establishment nations

$$y = cx^{-a}$$

Change on all scales is possible



*ie. $\log y = \log c - a \log x$

x

The map is not the territory

The model is not the reality

Grammar



Ceci n'est pas une pipe.

Rene Magritte

Source perversebeauty.blogspot.com

Risk

- Diversification reduces risk
- BUT
- Feedbacks increase systemic risk

Diversification reduces risk

According to

$$\sigma_p^2 = \sum \sum w_i w_j \sigma_{ij} \rho_{ij}$$

Feedbacks increase systemic risk

According to

$$h[\rho(t), \rho(t')] \leq 0$$

$$t' > t$$

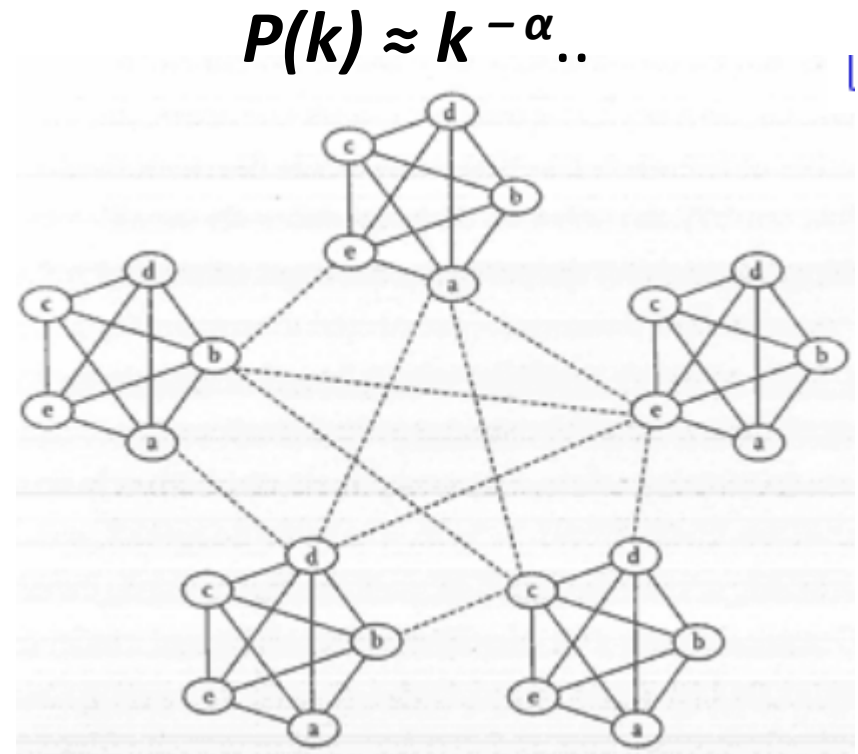
Metaphor for interdependence

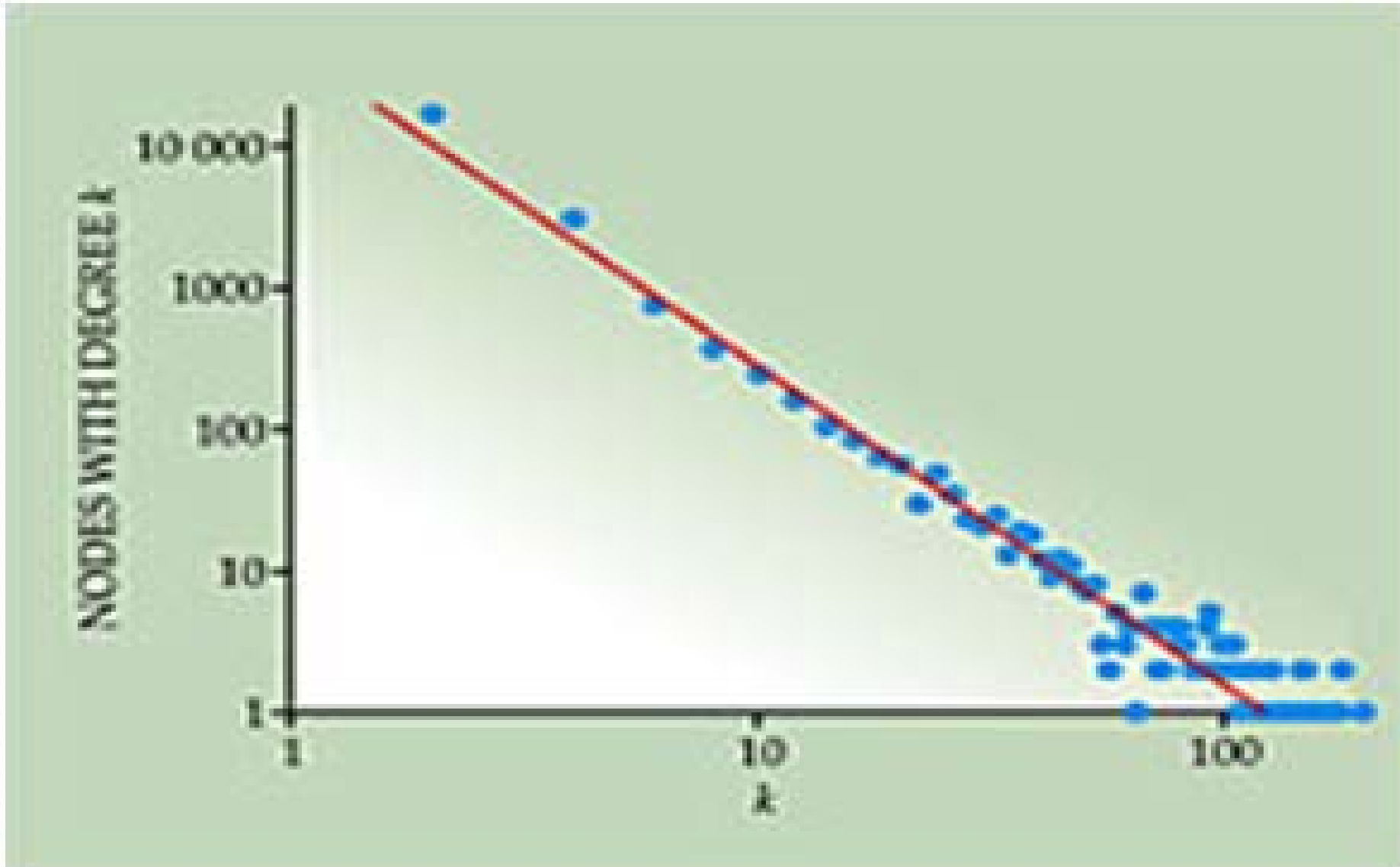
- Networks
- Default state: small world
 - Highly clustered
 - Short path lengths

Networks: default state

Small world: highly clustered, short path lengths

- Degree of a node is the number of edges (k) connecting it to other nodes.
- High degree nodes have many connections (high k); low degree nodes have few (low k)
- $P(k)$ probability of degree k follows a power law
- $P(k) \approx k^{-\alpha}..$





The internet

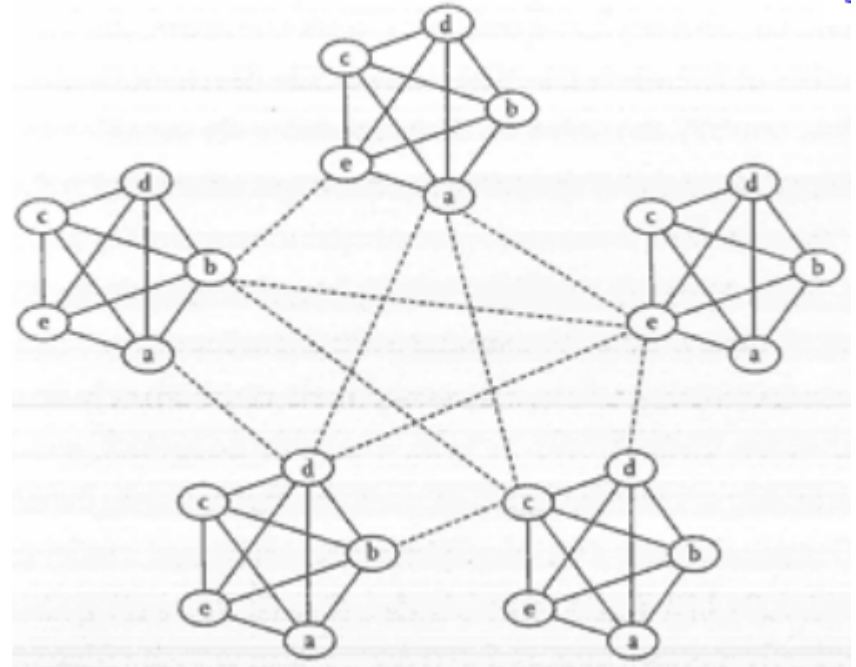
k = degree of a node; the number of connected edges

Networks: default state

Small world: highly clustered, short path lengths

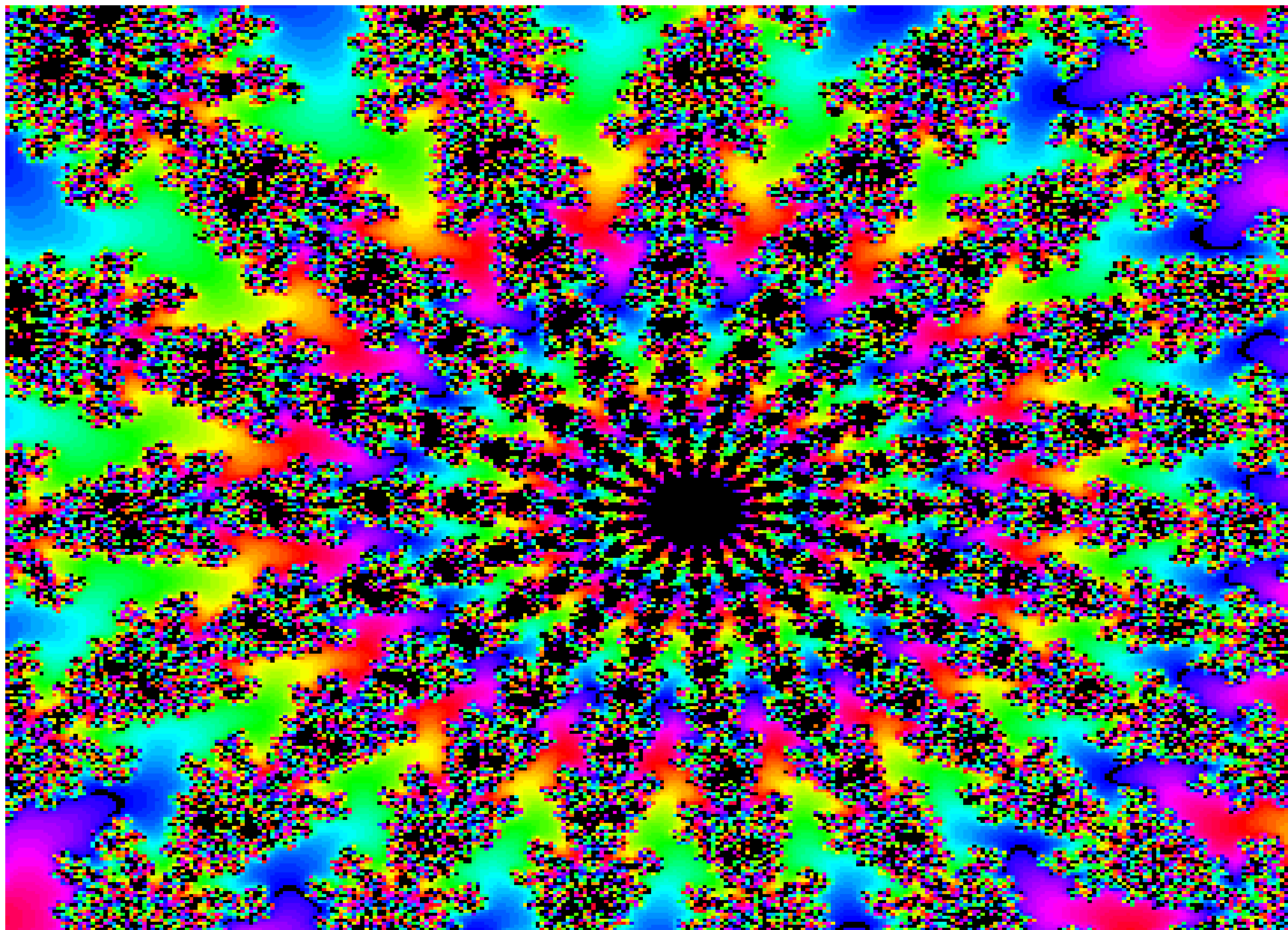
- Robust
- fragile

$$P(k) \approx k^{-\alpha} ..$$



CORRESPONDENCES

scale free → fractal → fat tailed distribution → risk
→ contagion → scale free → fractal →

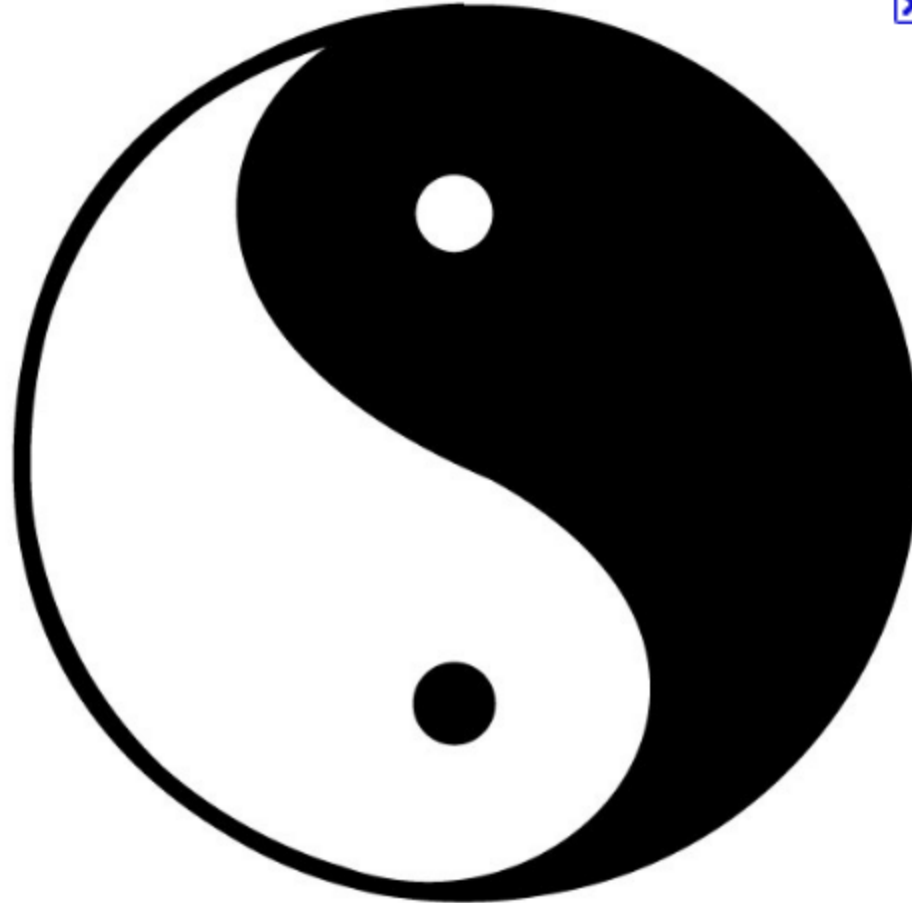


Fractal images

source <http://www.google.com/images/sdsc.edu>

Paradox

Paradoxes for policy



Paradox of interdependence

(a few examples)

- **State of the world economy**
 - TBTF TBTBO
 - Systemic risk: means that risk is a public good
 - Small worlds: fragility of the Eurozone
- **Paradox: policy**
 - Currency wars: both surplus and deficit economies need to devalue
 - Excess supply: but deficits cut demand
 - Inflation plus wage restraints/cuts mean deflation
 - Competition and administered prices
- **Paradox: ecology**
 - Impacts on global warming are fat tailed
 - Excess supply yet food prices rise
 - Impossibility/possibility of exponential growth
- **Paradox : emerging nations and establishment nations**
 - Need to balance economies as well as get gains from trade
 - Feedbacks/blowbacks from global trade
 - Long term reversals in the balance of economic power

Selected references

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