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Saïd Business School – Trinity 2014

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‘The evolution of knowledge systems’

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Tuesday 10th June 2014, 12.30 -14.00

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ABSTRACT:

The creation and allocation of economic wealth ultimately relies on the creation and diffusion of knowledge. As a result, understanding the dynamics, organization and viability of economies requires an in-depth analysis of knowledge systems. This work proposes to study knowledge systems as growing two-mode (bipartite) networks. It is found that: (i) through self-organization, innovation and face-to-face diffusion result in a stable power law distribution of ideas' popularity; (ii) this dynamic is compatible with the observed (shifted) power law distribution of citations among scientific papers, and (iii) the generalized beta size-rank relation observed for patent classes can be explained by a slowdown in the growth of the number of classes, relative to the number of patents. The general lesson from this work is that knowledge systems often exhibit non-equilibrium and non-linear dynamics, casting some doubts as to their long term viability.