Modeling the Dynamics of Network Formation and Evolution

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Dynamics of groups and institutions:
Their emergence, co-evolution and environment

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Outline

Predictive cohesion theory, network maturation, pump dynamics and other principles of network dynamics are examined as offering integrated modeling approaches to time-series network studies of the emergence of groups and institutions.

Six specific network modeling projects were examined to compare common and different dynamical principles in network formation and evolution.
These comprise the substantive sections of the paper:
1 Dynamics of Empire in Agrarian Systems 0-2000CE: Turchin's Metaethnic Frontier
2 European Trading Network and Polity Dynamics 1150-1480
3 Economic and Political Hegemons in the World Trading System1200-2000
4 The Differential Synchronies of National Economies (*input-output analyses)*
5 InterOrganizational Networks and Innovation Pumps in Biotech: 1988-2000
6 Foreign Investment networks in Eastern Europe and elsewhere

In presenting conclusions, it was decided to concentrate on one of these studies, #2. The slide presentation is found at http://eclectic.ss.uci.edu/~drwhite/Civ/ (live link)

Concluding sections draw out generalizations concerning:
1 Predictive Cohesion: Network Maturation and Group/Institutional Emergence
2 Fields and Organizations: Bundling, Organization and Cross-Linkage
3 Pump Dynamics and Co-Evolution with Systems Environments: Commodity chains, Capital Liquidity, Innovation
4 Dynamical Model and Empirical testing in historical and organizational contexts, including agent modeling of minimal ring cohesion.