



The New Invisible College and Policy for Nanoscience and Technology

Emerging Technologies/
Emerging Economies
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Infrastructures for Technology-based Development

- Technology
- Human Resources
- Institutions and infrastructure
- Collaboration and coordination
- Knowledge

THICK

- Open sourced or protected?
- Trained locally or imported?
- Standards organizations?
- Intermediary organizations?
- Indigenous knowledge or imported knowledge?



What is the Dynamic of Technology Development in a Globalized World?

- Not national
 - Even though nations still mediate within the system
- Not institution-based
 - Even though institutions still retain knowledge
- Not constructed or directed
 - Even though we still seek specific outcomes
- Not manageable
 - Can only be guided, incentivized



System is Structured

Five Forces are Structuring the 21st century system:

- *Networks*
- *Emergence*
- *Circulation*
- *Stickiness (place)*
- *Distribution (virtual)*

How does it Organize?



Networks Operate by Rules

- Simple rules embedded in actors create growth conditions
- Incentives incite action
- Interactive rules govern exchange, usually is reciprocal, cooperative
- Preferential attachment guides link dynamics, evolution
- Weak links, small worlds and redundancy create conditions for cooperation and competition
- Social capital is created--results in norms and values

How to “Grow” a Network?

- Facilitate interaction among many actors
- Create incentives to organize
- Establish goals, invite “champions”
- Create conditions for sharing (i.e. grid computing)
- Enable teams to outline “rules” of interaction
- Provide information about the “landscape” (culture)



Beyond the Nation State

- Structure is neither flat nor national
- System is influenced by policy but only at periphery
- Communications and attachment, seeking recognition and reward are the underlying rules
- Policies in line with the actual structure of the Invisible College have a greater chance of succeeding to develop science