Neurons in the network

Learning in Governance Networks in the Context of Environmental Management

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Network governance as a means to improve environmental management

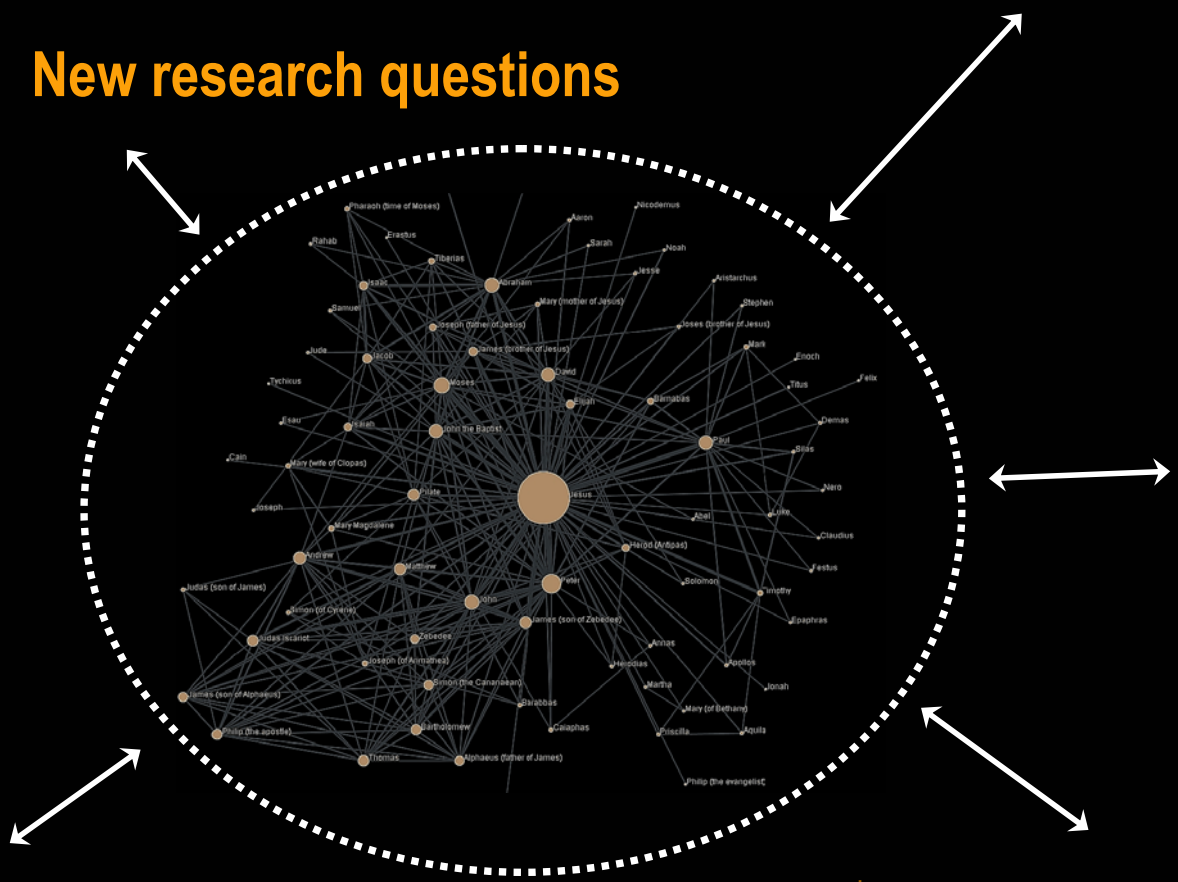
Transaction cost perspective: Networks between hierarchies (more flexible) and markets (more stable and reliable) allow actors to react flexibly to complex, uncertain and changing environmental conditions

Learning perspective: Integration of different souces of knowledge and competence, information sharing and social learning

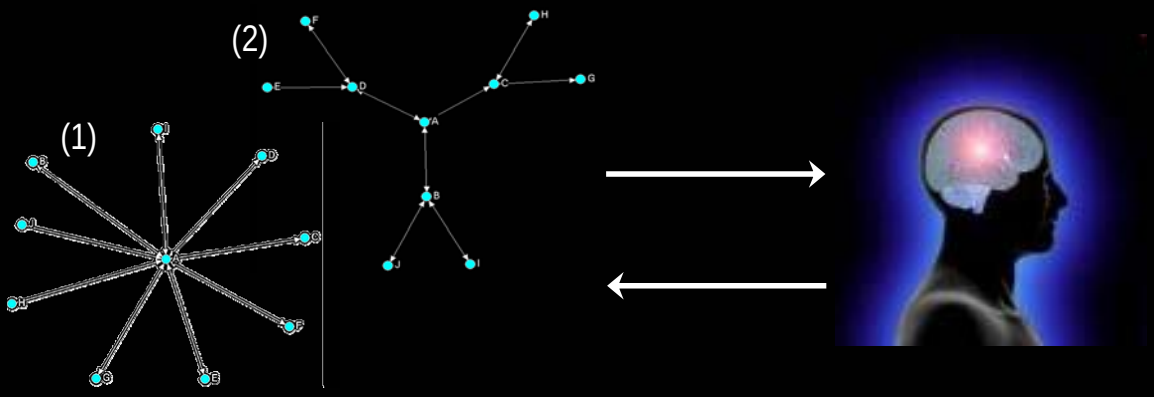
Complexity perspective: Networks as “dissipative structures” between markets and hierarchies “at the edge of chaos” are expected to produce emergent and creative solutions

Previous research on social networks

New research questions



How does network structure impact on learning



Network structure

(Social) Learning

…and vice versa?

Definition of learning

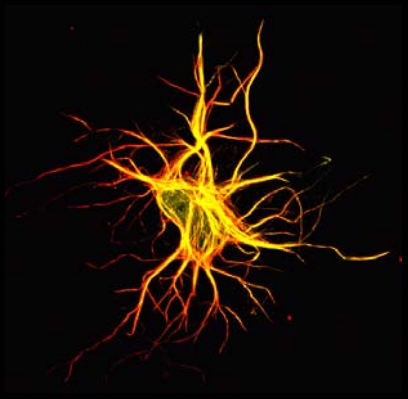
Definition: Cognitive (and behavioural) change **(Miller 1996, Argyris 2003)**

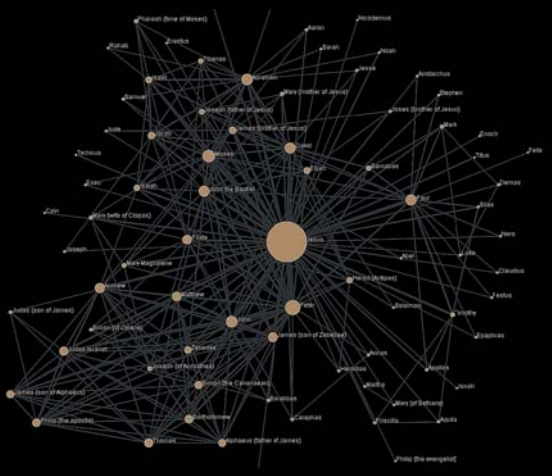
Hypothesis re. learning in networks: Networks provide an access to novel information and influence the way information is being processed

Learning-related network functions

- Information transmission **(Valente 2005)**
- Deliberation **(Habermas 1981, Webler/Renn 1995)**
- Resilience **(Berkes & Folke 1998)**

Individual and collective learning





Individual learning:
Change of neurons in a brain

Collective learning:
Change of network relations

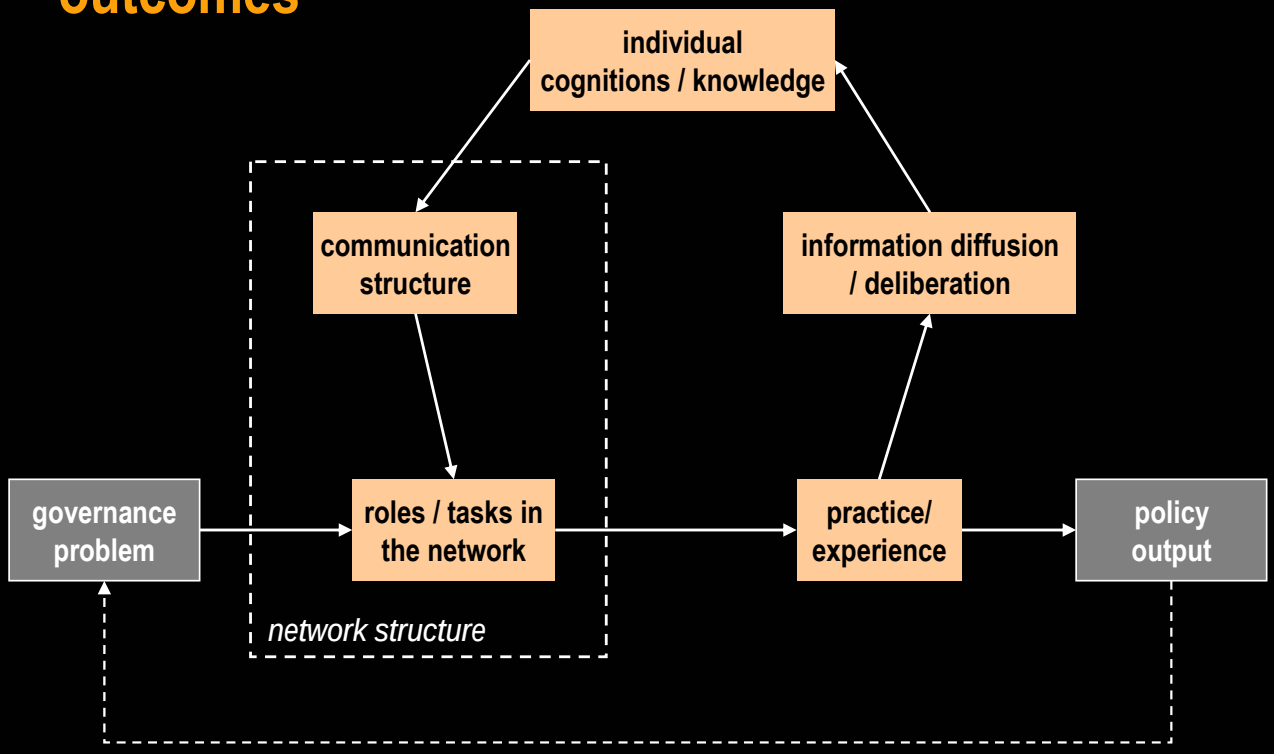
Single and double loop learning

	Single-loop learning	Double-loop learning
Individual learning	Learning of new facts Correction of practices	Change of assumptions and values
Collective learning	Punctual change in network structure Policy output: change of rules of operational choice	Fundamental change of network structure; Building of network resilience Policy output: change of rules of collective-choice

Network characteristics and the performance of network functions

Network function / Ntw. characteristic	Information transmission	Deliberation	Resilience	Single-loop learning	Double-loop learning
Network Size	+	+ / - (convex curve)	+	+	+ / - (convex curve)
Homophily	+	+	+	+	○
Multiplexity	+	+	+	+	–
Density	++	+	+	+	–
Cohesion / absence of structural holes	+	++	+	+	–
Relation of weak to strong ties	+	–	○	○	+
Centralisation	+	–	–	+	+

Network interactions, learning and policy outcomes



Thank you!