How to cope with complexity?
The Paradox of opening and closing strategies

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Structure of presentation

• How to cope with complexity and uncertainty in mega infrastructure projects?
• The paradox of opening and closing strategies
• The need of adaptability and learning process
• Three crucial concepts: strategic ambiguity, redundancy and resilience
• Illustration in 2 Dutch cases: HSL South + Randstadrail
• To conclude
How to cope with complexity and uncertainty?

• The sources of complexity and uncertainty: technological, social, political, material, legal
• Changeable conditions, changeable preferences, increasing social concerns
• ‘major routes’ start as projects with primary functions but may end up multi-functional
• Reoccurring controversies
• Mega projects take 20 years: the only certainty is that things go different than expected
The paradox of opening and closing strategies

• Two paradoxical strategies: the ‘opening’ and the ‘closing’ approaches
• Opening strategies accept complexity and uncertainty: They open the decision-making in all respects: the goals, the knowledge, the configuration of decision arena, the organisation of process

• The closing strategies reject complexity and uncertainty
• They close the door in the same respects, well aware of constraints (time, money, opportunity)
The need of adaptability and learning process

- The opening and closing strategies are diametrically opposed
- The solution of the one is considered as the very problem of the other
- The truth is not in-between: both are needed
- The chain of decisions should be organized in a rational and selective way but adaptive, and fueled by strategic reflection (strategic incrementalism)
Three crucial concepts

- We adopt a pragmatic experimenting approach tracing down a selected pathway but it should be fueled by *strategic ambiguity* of project mission, by *redundancy* of knowledge and *resilience* of decision making.
- The three concepts are coherent.
- They create open decision-making but at the same time build forward on a pragmatic and selective approach.
Strategic ambiguity

• Strategic reflection must be organized at several intervals on behalf of the framing and reframing of project mission

• Strategic ambiguity is crucial: it recognizes complexity and emergent properties:
  - Defining the mission in principal terms
  - Defining a field of tension of principles
  - Recognize conflicting values and interests

• Select trajectories within these frames
Redundancy of knowledge in order to feed feasible pathways

• Conflicts of value cannot be solved but should be translated in feasible pathways (the art of planning)
• Redundancy of knowledge is needed to enable recombination in uncertain circumstances
• Focus redundancy of knowledge on development of alternative pathways
• Values cannot be renegotiated but feasible pathways can be compared and exchanged
Resilience

- Resilience relies on the availability of redundant information enabling the recombination of pathways
- Resilience also sees on the flexibility of decision-making
- Crucial for resilient decision-making is to select decisions in such a way that space is left for future decision-making
Case HSL South Netherlands 1990s

• Focus on Rotterdam- Amsterdam trajectory
• Three alternatives:
  A. fast connection international network
  B. avoid the green heart landscape
  C. Promote urban network Randstad
• A dominant, B opposition, C neglected
• Deadlock a and b; solved by compromise
• Best recombination of a, b and c not used....
Case Randstadrail

- Regional light rail interconnecting Rotterdam, The Hague and new town Zoetermeer
- Typical infrastructure project, highly complex because of disconnected and non-convertible subway city and tramline city
- Proposal for completely new system rejected by state (10 years stalemate until 2001)
- Successful solution since reassigning power
To conclude

- HSL South: highly selective, hierarchical power but no strategic ambiguity, no deep search of redundant pathways, problematic resilience
- Optimal recombination a,b and c not used
- Randstadrail: initially not selective, no clear assignment of power but ambiguous strategy
- Only after reasserting power, effective use of ambiguity and redundant alternatives
- Resulting in effective recombination