

La Géoprospective : apports de la dimension spatiale aux recherches prospectives ?
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Les ontologies dans les analyses géoprospectives participatives

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Géoprospective: a planner viewpoint

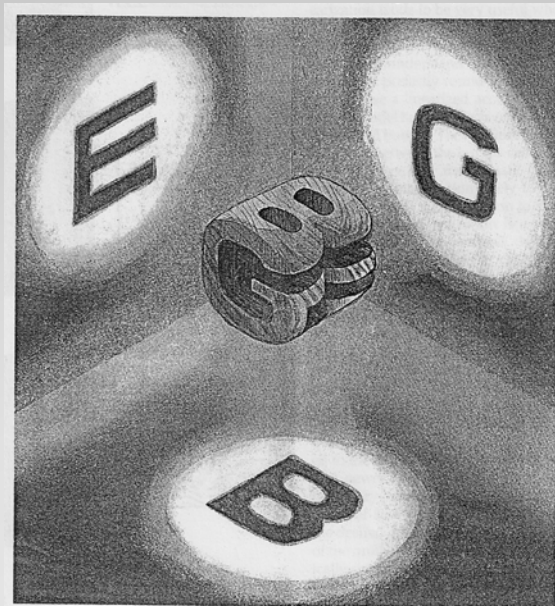
- A territory: a complex space ...

	Descart (points)	Leibnitz (relations)
Physical (Infrastructures; Environment; etc.)	Sites; Areas e.g. Buildings	Networks e.g. Roads
Functional (Economy; Society; etc.)	Clusters e.g. Segregation	Interactions e.g. Commuting
Cultural (Policies; Aesthetics; Histories; etc.)	Milieu e.g. Community	Inclusions e.g. World-cities

Géoprospective: a planner viewpoint

- ... and its tricky reconstruction

Human
Sciences

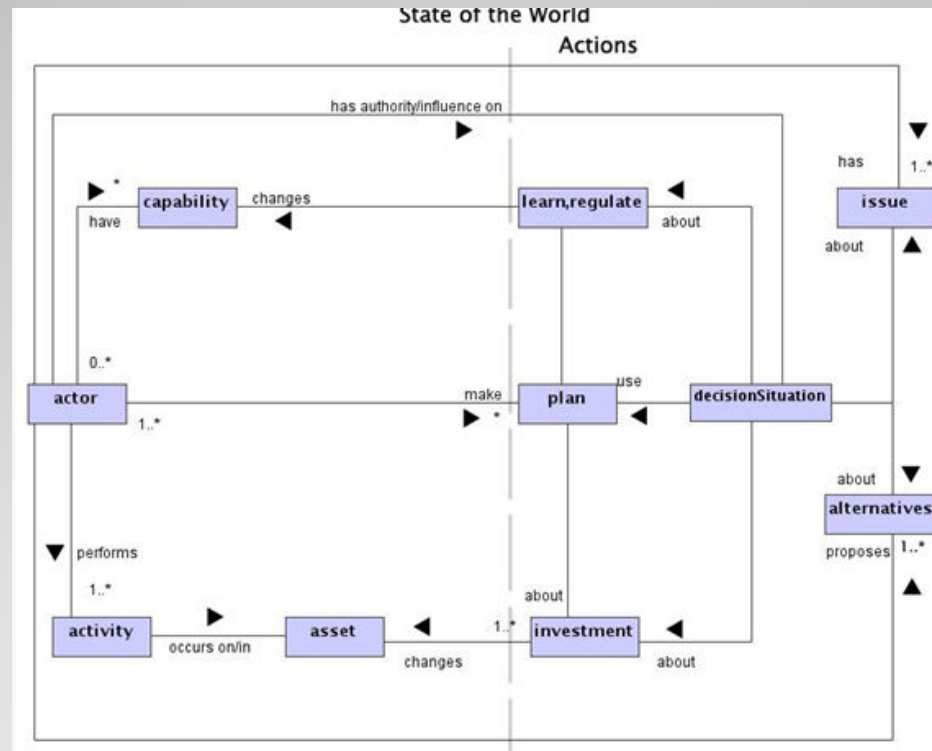


Natural
Sciences

Planning
Sciences

Géoprospective: a planner viewpoint

- Despite the heavy involvement of «geographical objects» spatial planning is very different from geography (Couclelis)



[L.D. Hopkins \(2001\): The logic of making plans](#)

Géoprospective: a planner viewpoint

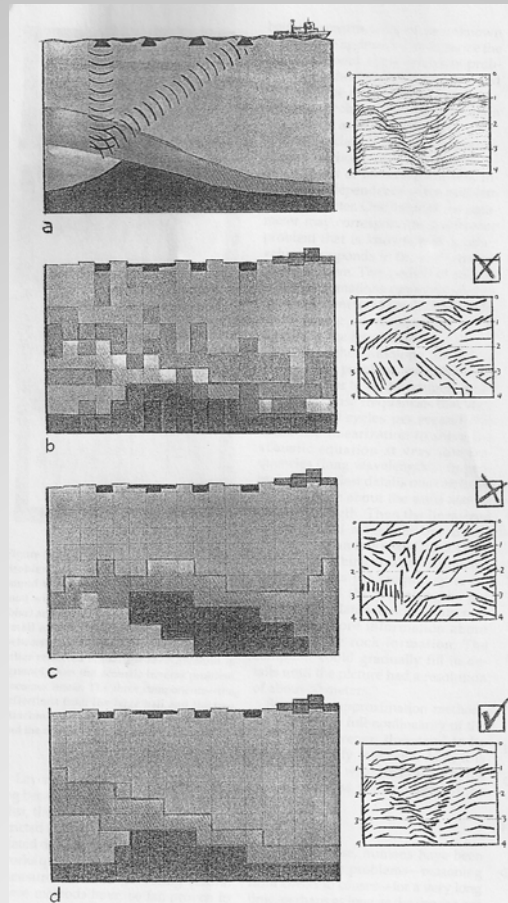
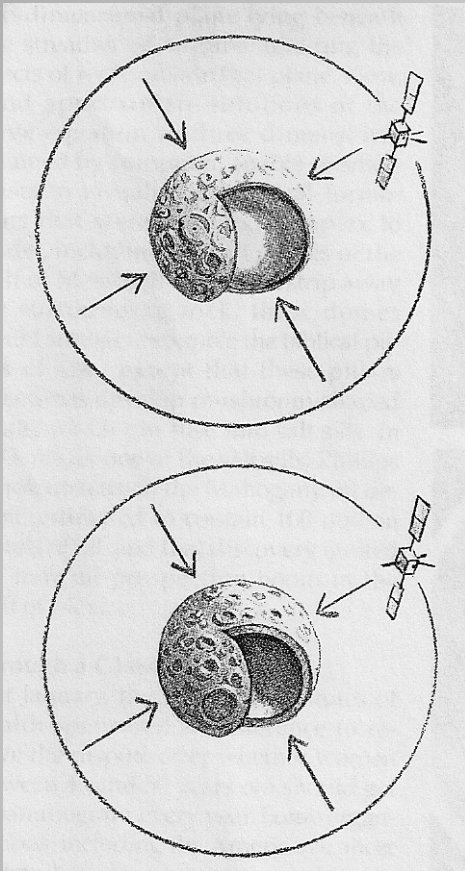
- Géoprospective as an attempt to build a new bridge between knowledge (geography) and action (planning), more conscious of the differences ...

... a matter largely unexplored till now!

E.g. Géoprospective as « Inverse problems solving »

Géoprospective: a planner viewpoint

- Géoprospective as « inverse problems solving »



Direct problem

$$F(X, a) \Rightarrow Y$$

fitting procedure:

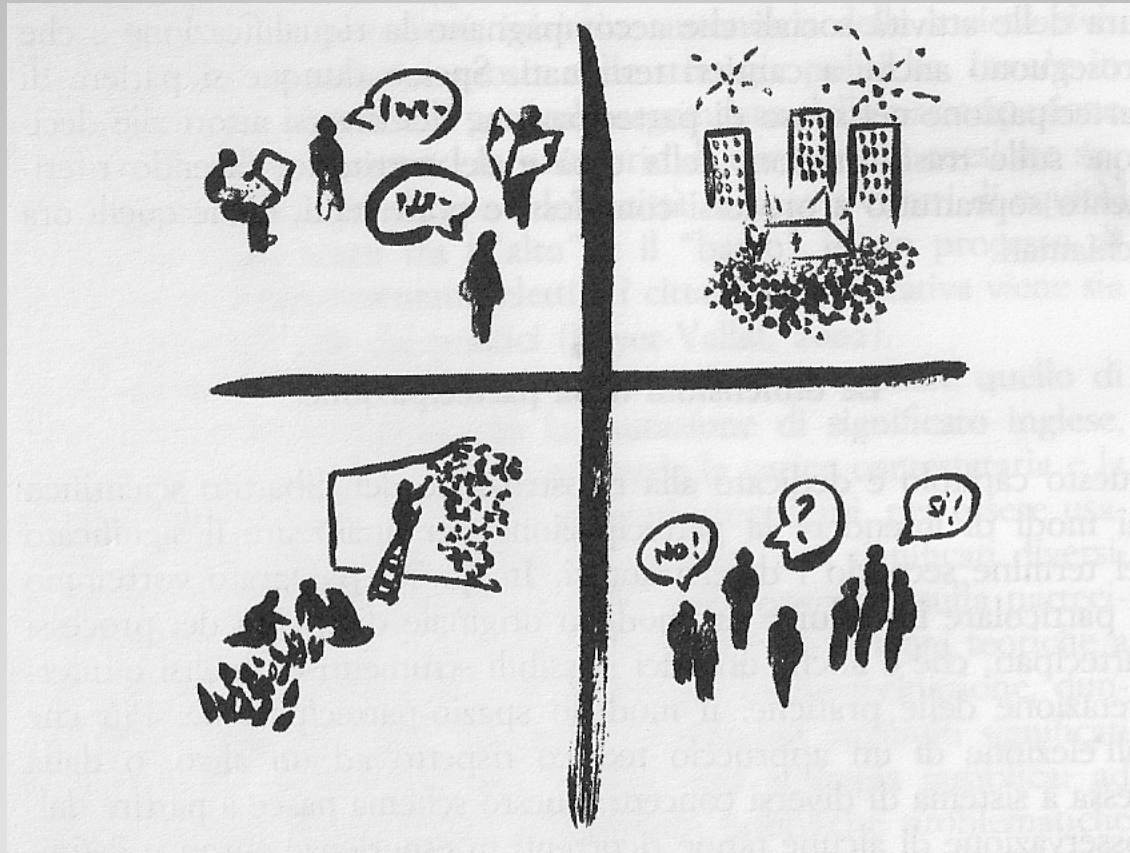
$$F(X, \mathbf{a}) \leq \mathbf{Y}$$

Inverse problem

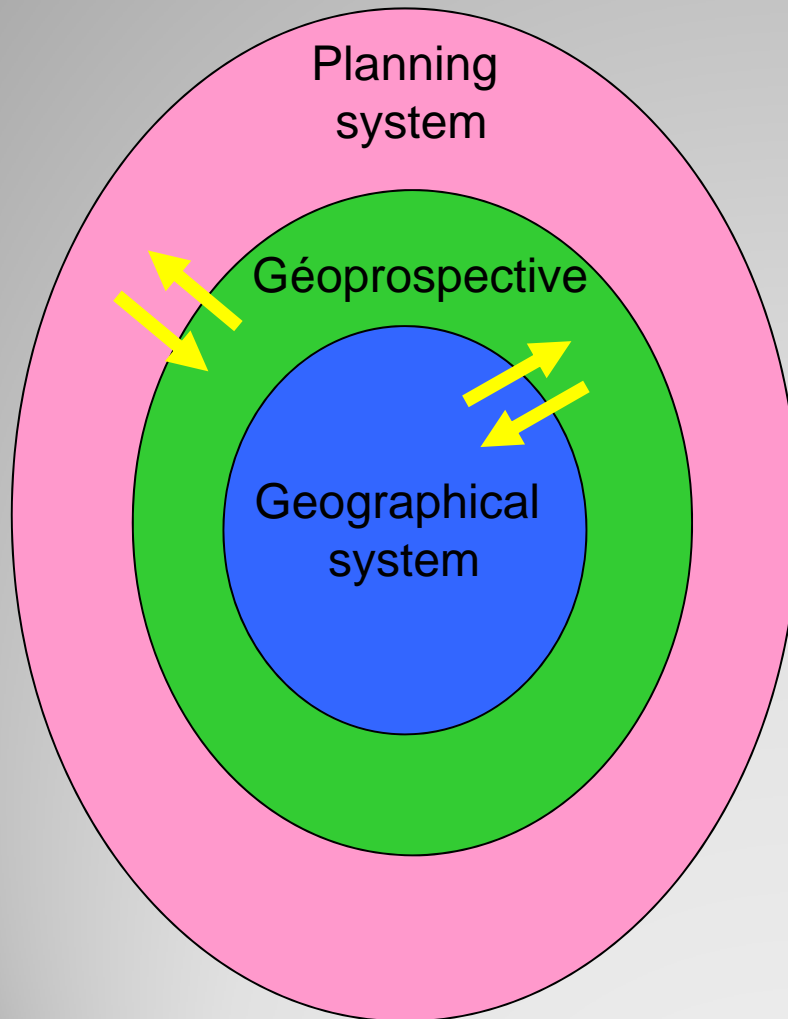
$$F(\mathbf{X}, a) \leq \mathbf{Y}$$

Géoprospective and participation

- Participation: information, decision, animation, empowerment



Géoprospective and participation



Géoprospective must be suitable for participatory planning



Géoprospective may be made in collaboration



Géoprospective studies collaborative processes



We need tools supporting to deal with participation in géoprospective studies

Formal Ontologies: a brief recall (1)

- **Definition:**

“An ontology is a formal and explicit specification of a shared conceptualization” (Studer, 1998)

- **Explanation:**

- [semantic relationships](#) among concepts, which represent the [agreed view](#) of a [system structure](#) (a domain of knowledge)
- (Easy for human) machine-understandable languages (automatic reasoning: e.g.: classification, inference, ...)
- Multi level ontologies (from a top level ontology to generic ontologies); re-usability; interoperability; ...

- **Detail:**

An ontology classification: from [hard](#) ontologies to [soft](#) ontologies depending on the degree of formalization of semantic relationship

Formal Ontologies: a brief recall (2)

- **Tools:**

- Formal dictionaries, Thesauri, etc.
- Unified Modelling Language
- Mental, Conceptual, Cognitive Maps
- Taxonomies and Folksonomies
- ...

- **Software (examples):**

- Protégé, CmapTools Ontology, ...
- StarUML, Visual Paradigm, ...
- CmapTools, Decision Explorer, ...
- Tag-Clouds, WP-Cumulus, ...
- ...

Ontologies and participative géoprospective

Ontologies as LCA (Learning, Communication, Action) mediators

- **Learning:**
Ontologies for extraction of knowledge (people preferences, plans and common «visions », evaluation of results ...
- **Communication:**
Ontologies for interaction with stakeholders, for interdisciplinary research teams, ...
- **Action (model development and use)**
Ontologies for géoprospective (model) development, suitability to planning use ...

Example 1: Learning

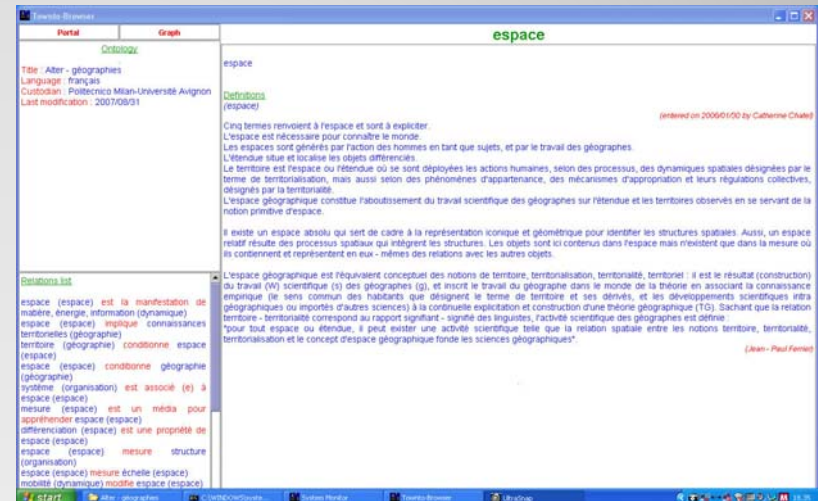
- Exploitation of Distributed Common Knowledge

Folksonomy

Preferences

Guida Turismo Hotel
Utili Residence Appartamenti
Paesi Mondo Itinerari turistici
Manifestazioni Prenota Guide turistiche
Eventi Viaggi Spiagge
Vacanze Mare Località Itinerari
Storia Musei

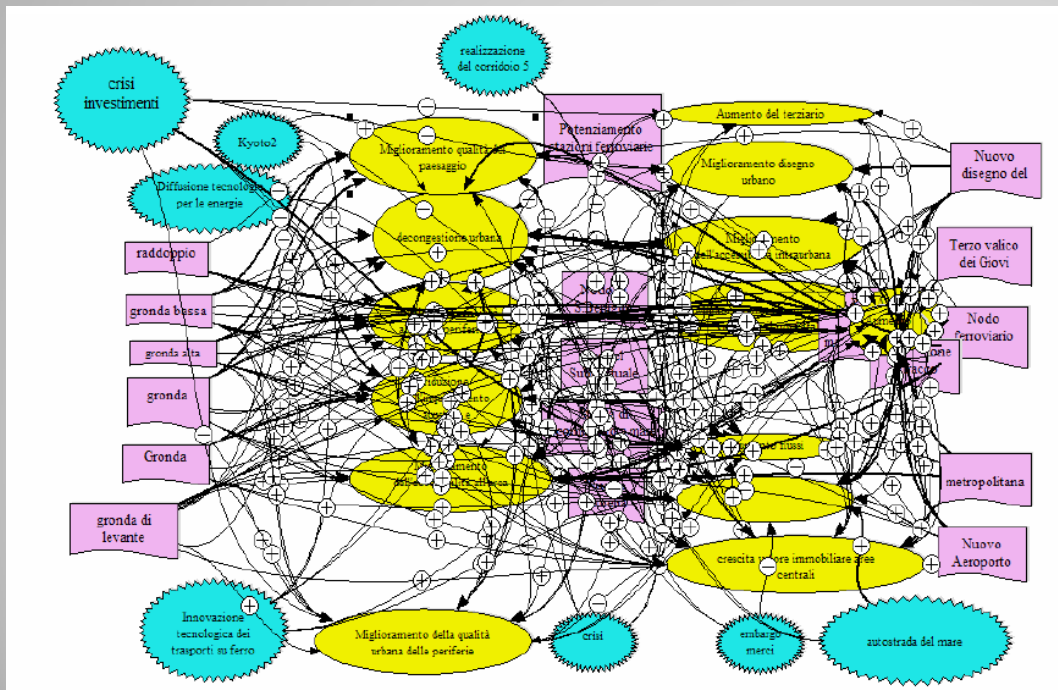




Example 3: Géoprospective design

- Development of a qualitative géoprospective

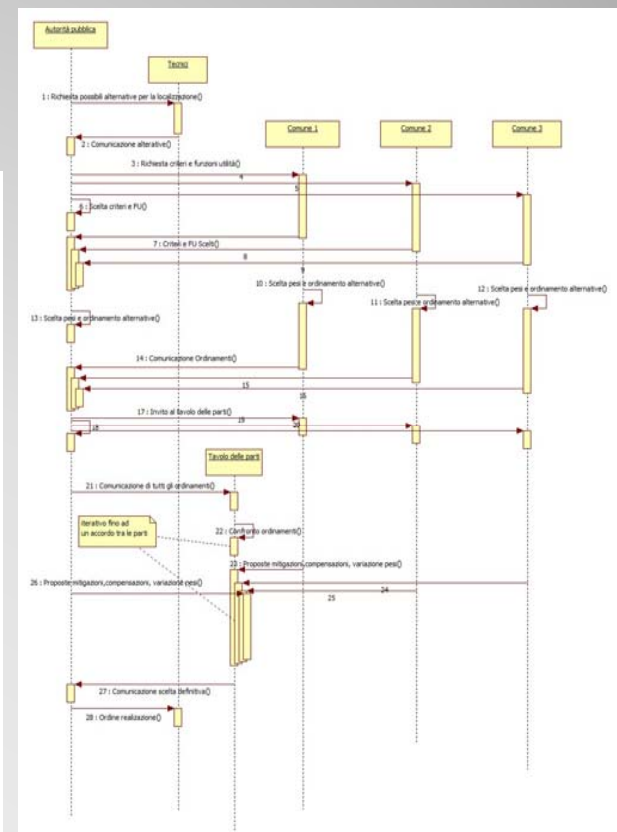
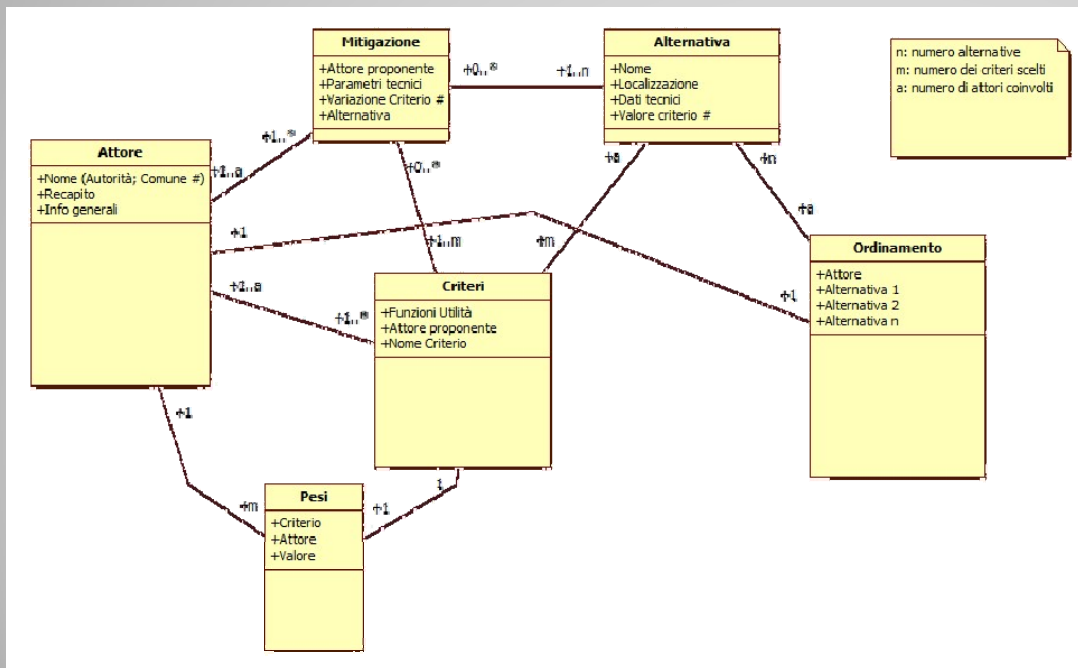
Conceptual model of a decision situation (with many stakeholders, multi actions, multi interacting effects)



Example 4: Géoprospective design

- Development of a quantitative géoprospective

UML for an univocal participative and interoperative modelling



**Merci de votre
attention**