



Complexity approaches to policies in a digital era

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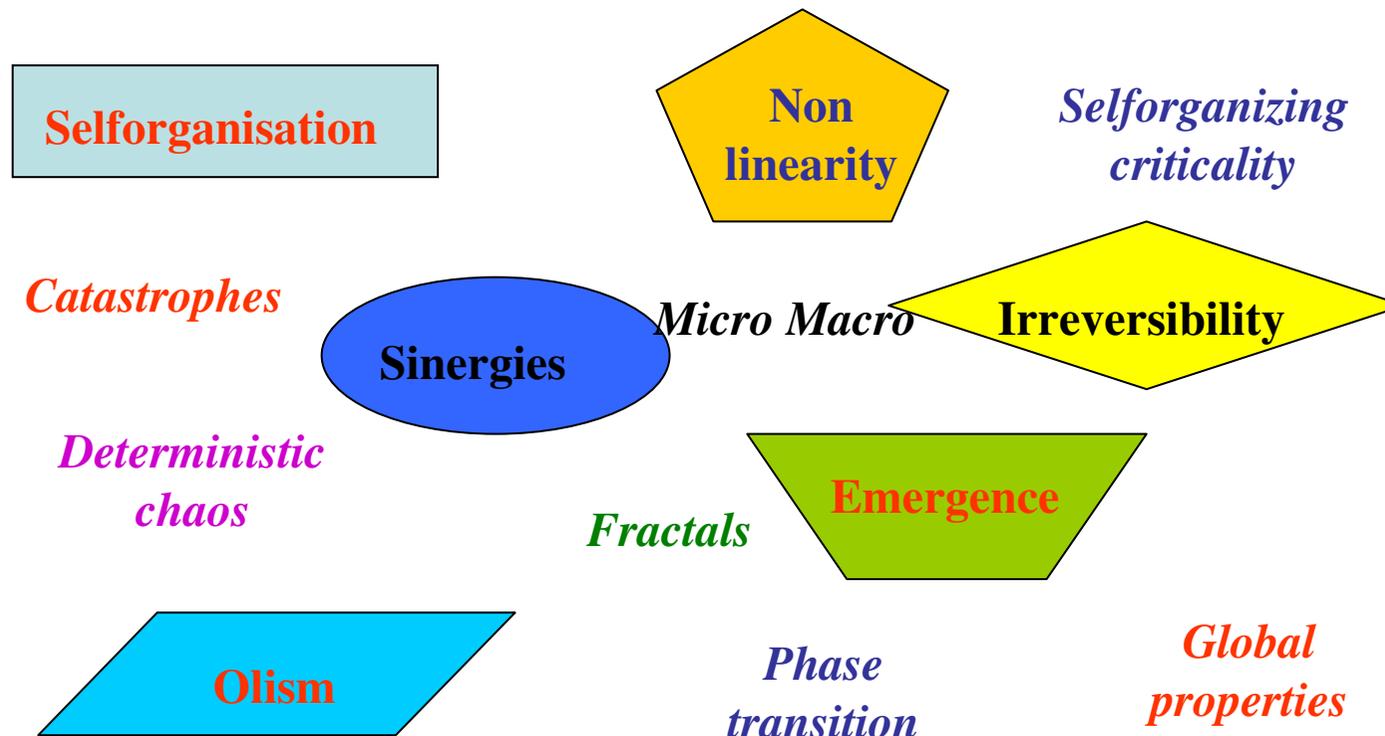
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- Implications for planning
(i.e: open questions and some initial solutions)
 - What about tools in complex planning?
 - How to empower policies in self-organizing societies?
 - How much social are knowledge (digital) societies?
 - Science of complexity: what the lessons from planning?



A complex view of complexity

STEP 0: A «fruit salade» of complexity concepts





A complex view of complexity

STEP 1: Organizing the world of complexity

**Emerging
properties**

**Roots of
complexity**

**Dialogic
principle**

Numerousness

**Self-referential
principle**

Non-linearities

**Hologrammatic
principle**

Dynamics



A complex view of complexity

STEP 2: Bridging the gap between roots and emerg prop

**The mechanism
of bridging**

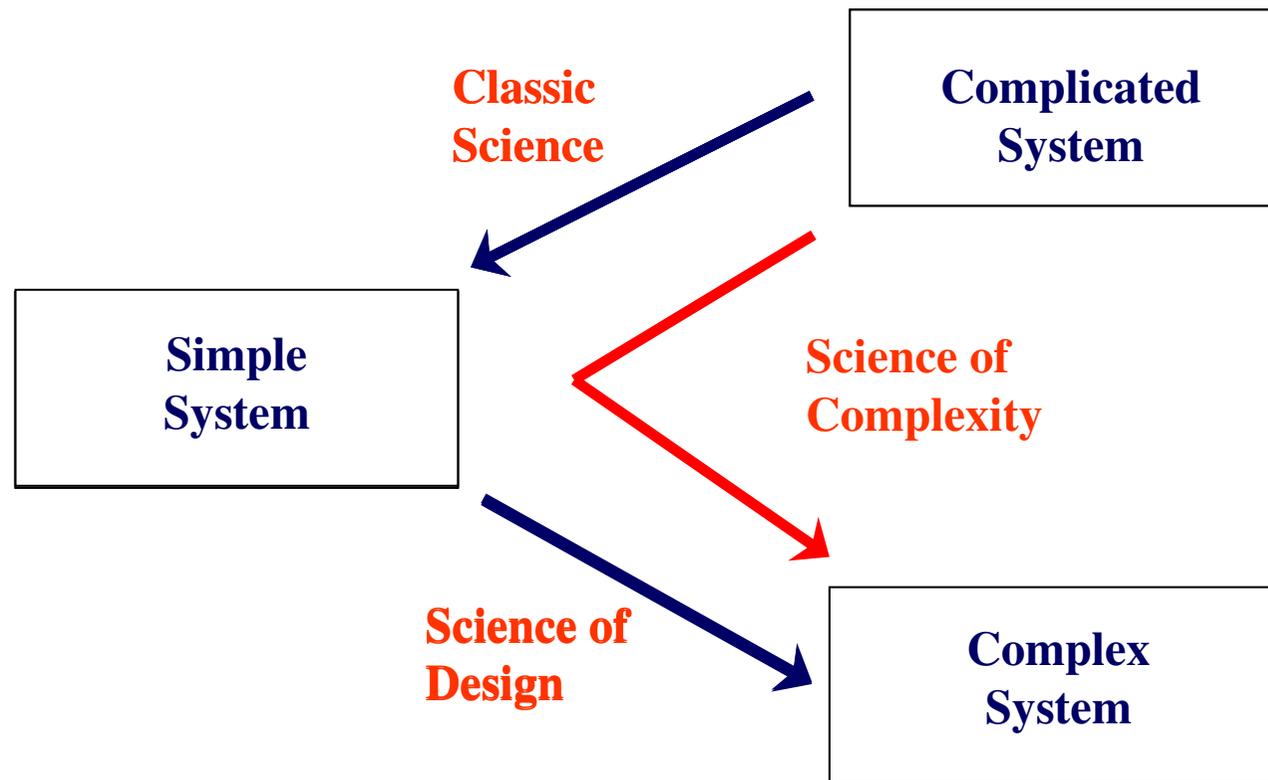


**The very nature
of knowledge**

**The role of new
I.C. technologies**



A complex view of complexity: the mechanism of bridging



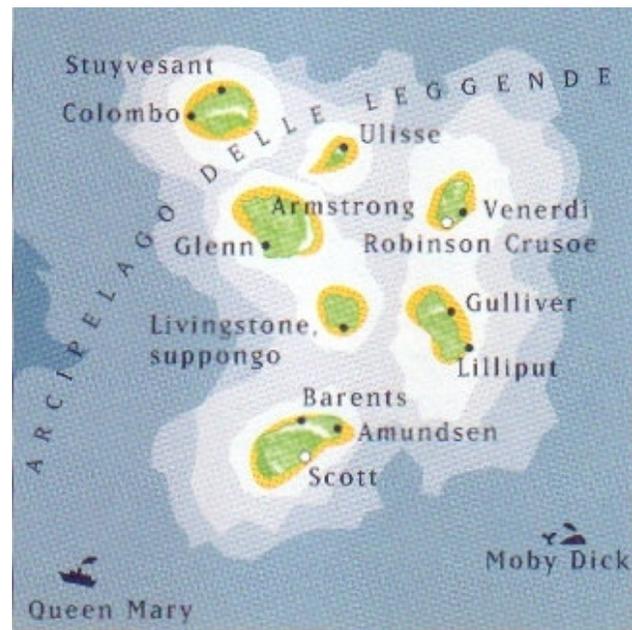


A complex view of complexity.
The very nature of knowledge (I):
*Individual human knowledge is
like an iceberg*

| Awareness level | Knowledge level | Knowledge typology | Specificity |
|-----------------|-----------------|------------------------|------------------|
| YES | YES | Conscious knowledge | Explicit |
| | | | Implicit |
| NO | YES | Unconscious knowledge | Per default |
| | | | Subconscious |
| YES | NO | Ignorance | Unknown |
| | | | No-knowable |
| NO | NO | Ignorance of ignorance | (nothing to say) |



A complex view of complexity.
The very nature of knowledge (I):
*Individual human knowledge is like
an iceberg and ... an archipelago!*





A complex view of complexity.
The very nature of knowledge (II):

- *about individual knowledge:*
 - *Conscious knowledge allows intentionality in actions*
 - *Unconscious knowledge allows ethical and aesthetic senses*
- *about collective knowledge:*
 - *Multi-level minds (individual, family, clan ...)*
 - *Various degrees of consciousness in different levels*



A complex view of complexity
The role of new I.C. technologies

**The 4 dimensions of change in
knowledge management:**

- *“Extreme data” handling*
- *“Visualization” of knowledge*
- *Computer-aided “reasoning” and artificial reasoning*
- *“At distance” distributed knowledge*



Implications for planning

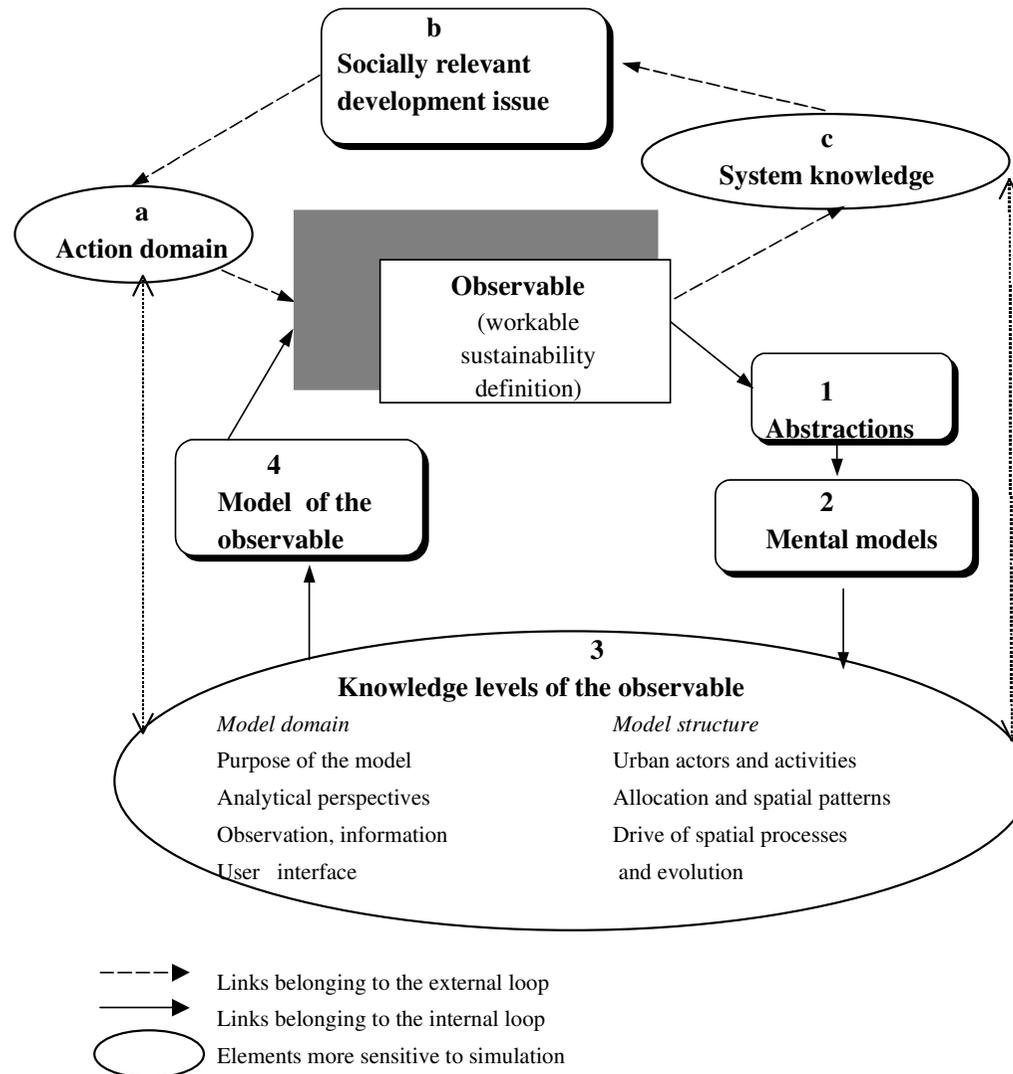
(i.e: open questions and some initial solutions)

1. Tools in complex planning (I)

A complex view of “model” building process
(model as propositional and procedural
representation of knowledge)

- the internal loop, or “formal building” of the model, referring to the conventional steps underlying a process of abstraction (i.e. modelling).
- the external loop, or “substantial building” of the model, that refers to the historical and socio-cultural domain in which the process of abstraction/modelling occurs.

Tools in complex planning (II)





Tools in complex planning (III)

The *structural-cognitive* shift (Occelli and Rabino, 2000):

- from a view where “modelling” (formal representation of knowledge) is an activity through which an understanding of the organizational structure of an urban system is obtained (the structural perspective). According to this view a model is a (simplified) representation of urban phenomena and the ways they are produced;
- to a view where modelling is an activity for testing, exploring, creating and communicating knowledge about certain urban phenomena (the cognitive perspective). Models therefore are means for representing the working of our knowledge hypotheses (and of their outcome).



Tools in complex planning (IV)

Modelling as an ALC agent:

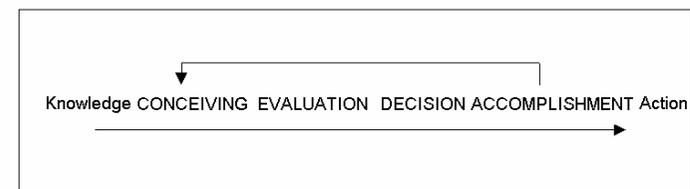
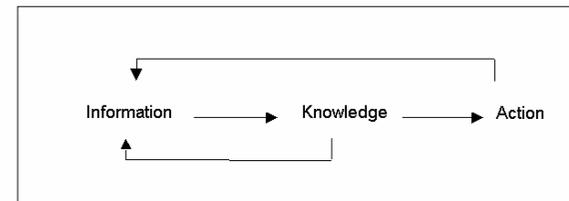
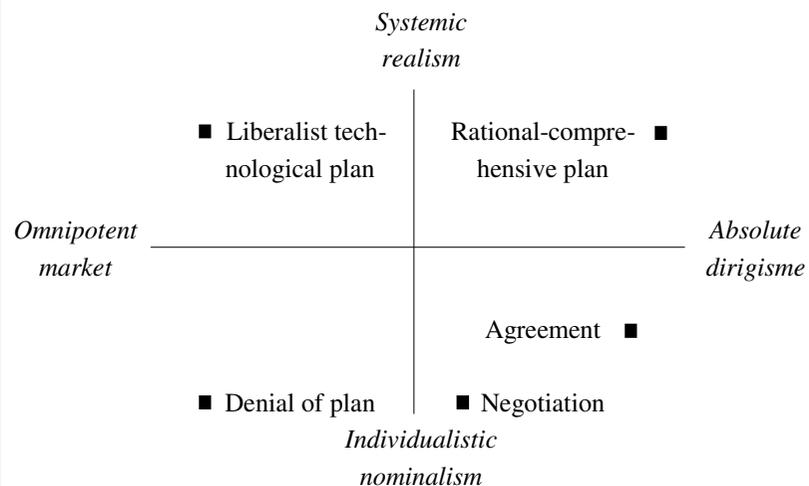
- **performing a certain course of Action**, thus enabling the realization of a certain project of investigation of spatial phenomena. It involves the relationships between the syntactic and representational components of modelling
- **enabling users with a certain Learning ability**, thus generating stimuli in critical revising both the external and internal loops of the modelling activity likely to trigger new quest of investigation
- **Communicate with other kinds of agents** (other models), thereby affecting them and/or modifying itself in the process.



Implications for planning
(i.e: open questions and some initial solutions)

2. Empowerment of policies in self-organizing societies (I)

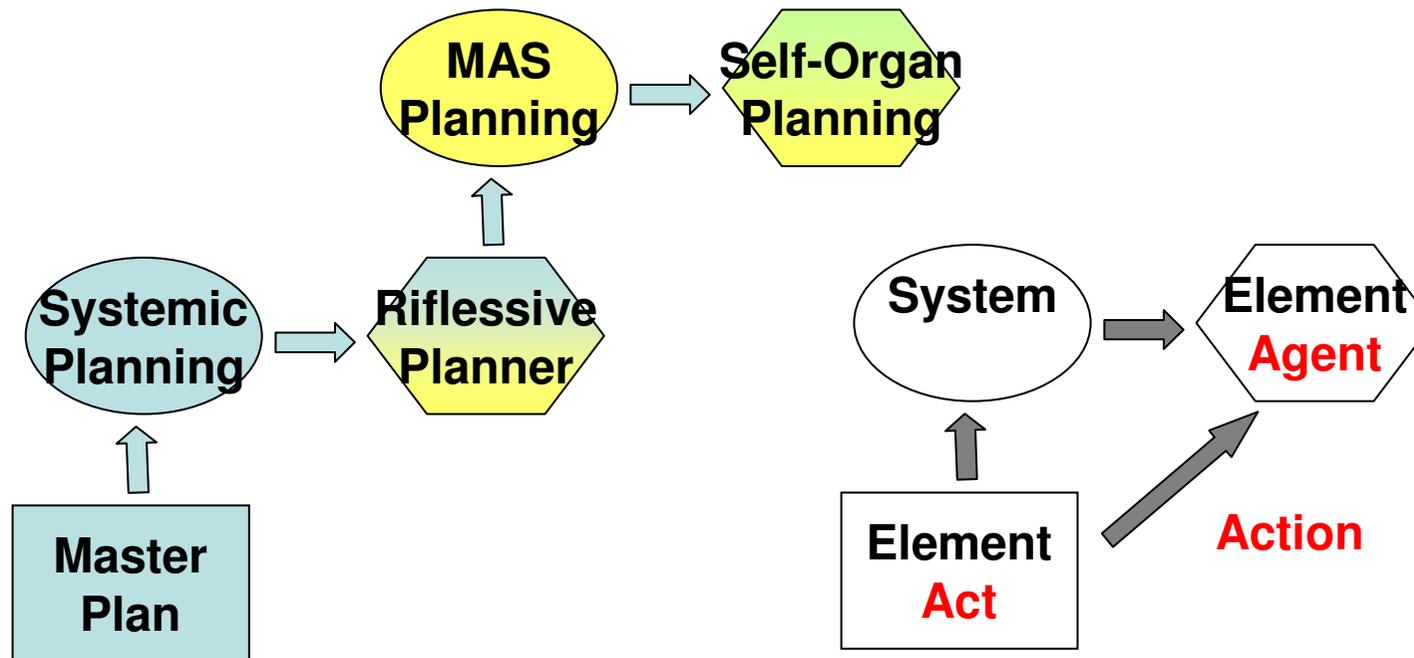
**Several ways of interpretation of various planning styles
(command, systemic, procedural, advocacy, participant, communicative ...)**



Implications for planning
(i.e: open questions and some initial solutions)

2. Empowerment of policies in self-organizing societies (II)

**A societal view of planning styles evolution
(from classic control to self-organization)**





Implications for planning
(i.e: open questions and some initial solutions)

2. Empowerment of policies in self-organizing societies (III)

Some peculiarities of planning in self-organizing societies:

1. About the nature of planning/policy:

- **A Copernican revolution: from “planning the system” to “plan just as one of the activities” of a (self-organizing) society**
- **Policies as an “opportunity” to deal with the unknown**

2. About the planning contents and methods:

- **Policies as reflexive procedures: acknowledging the different types of knowledge/learning**
- **Policies as an activity to establish or to improve (social) networks**
- **Compulsory use of “simulation” models (ALC agents) to look for the “emerging” outcomes of the policies**



Implications for planning
(i.e: open questions and some initial solutions)

3. Social tie in knowledge societies (I)

A. THE PREMISE

Social cohesion/fragmentation is the setting within them always planning is defined (especially, in a self-organizing society)

B. THE CONTEXT

About social cohesion in a knowledge society, we range between two extreme point-of- views:

- **N. Negroponte' euphoria: harmony, enhanced human capabilities**
- **N. Postman' catastrophism: anarchism or technological tyranny**

C. THE THEORIES

- **Classical science is unable to solve the dilemma, because social cohesion and personal success go with dia-logic mechanisms (cooperation vs antagonism)**



Implications for planning
(i.e: open questions and some initial solutions)

3. Social tie in knowledge societies (II)

(continued)

- **Science of complexity, on the contrary, explains each phenomenon in term of the other one (using “evolutionary theory” principles); it allows for a “steady state” between cohesion and fragmentation**

D. THE IMPLICATIONS

Planning and policies can contribute to define the above steady state, by the way of (open questions, a research agenda) understanding and managing:

- **the “human communications” in an “information wired” society**
- **the new effective power structures in a knowledge society and the new social “clubs and classes” in that society.**



Implications for planning
(i.e: open questions and some initial solutions)

4. Complexity science: the lessons from planning

Theoretical level

1. **Achievements: e.g. strategic planning as an “evolutionary” theory**
2. **Open problems: e.g. a “complex” theory for conflict solution/management**

Methodological and tools level

1. **Achievements: e.g. cognitive maps, collaborative building of “scenarios”, formal ontologies ...**
2. **Opportunities: e.g. “creative” mechanisms embedded in planning activities (such as design, visioning ...)**



A moral as a conclusion

Quoting Marcello Cini's book:

*The supermarket of Prometheus:
Science in a knowledge economy era*

When he was young, Prometheus stole the fire (**the science**) to the Gods in order to give it to mankind. He paid dearly for it. He still has his liver full of scars.

Becoming old, he lost a lot of illusions though. He came to an agreement with the Gods, who have changed their name, but they are always the same arrogant ones, and he accepted to manage a supermarket (**modern technologies**) for the Gods.

But deep inside the heart, Prometheus remains an idealist. Moreover he took badly the matter of the eagle. Who knows, maybe one day he will come back to our side (**the science of complexity?**)

In red, authors' annotations