Professional Development Seminar on Modeling Strategies and Decision-Support Tools for the Management of Complex Socio-Ecological Systems

Interdisciplinary research with stakeholders involvement for policy relevant management.

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(English translation under revision)

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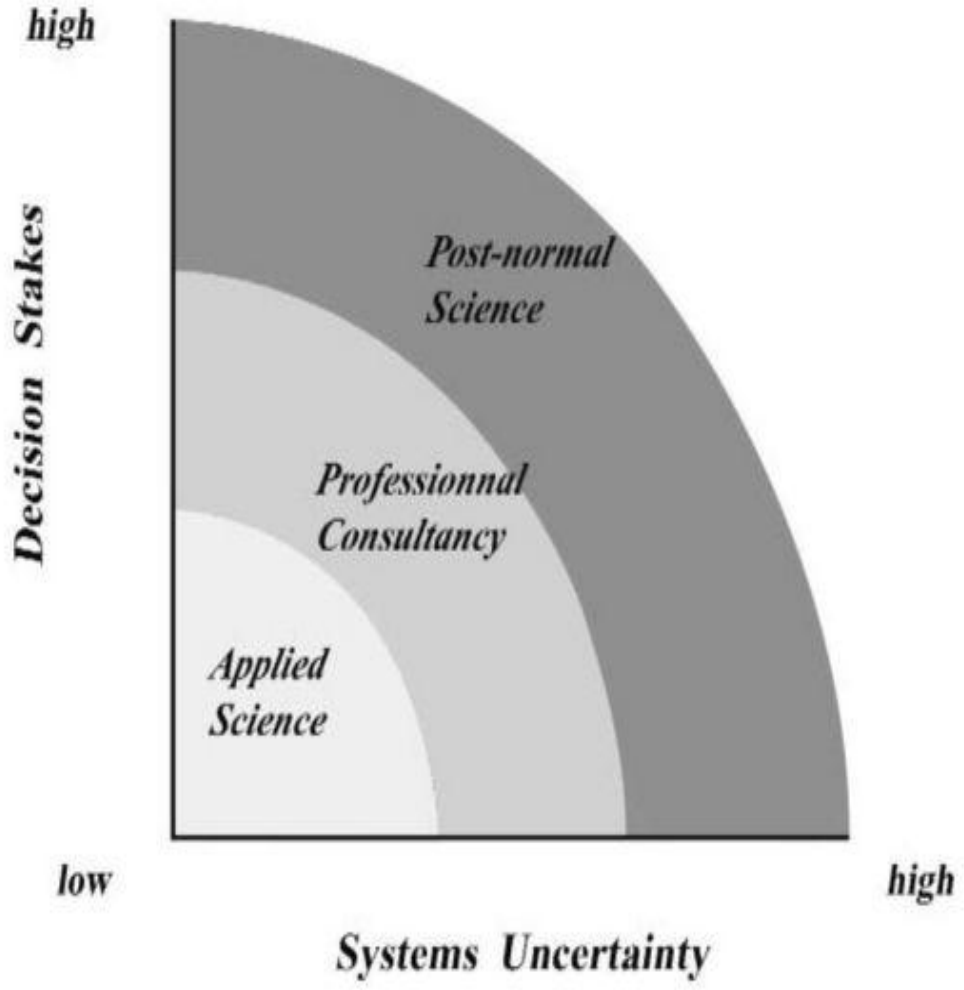
1. New science for the solution of new complex environmental problems.

STRATEGY FOR RESOLUTION OF EMERGING PROBLEMS.

APPLICATION TO GLOBAL ENVIRONMENTAL RISKS

An approach for cases where

- facts are uncertain,
- values in dispute,
- stakes high and
- decisions urgent.



Funtowicz, S. O., and J. R. Ravetz. "Science for the Post-Normal Age", *Futures,* 25/7 September 1993, p. 739–755.

Basic and Applied Science

Figura 2

Incertidumbre a nivel técnico, riesgos en juego bajos.
Rutinas y procedimientos standard; ejercicios reproducibles, predecibles.
Resolución de enigmas que se supone tienen respuesta.
El producto se aplicará en un emprendimiento que está fuera del interés del investigador.
Control de calidad a través de revisión de pares y referato de artículos.
Saber corporativo.

Esto se trastoca cuando las consecuencias son mayores que el recorte de la propia investigación, trascendiendo los límites del laboratorio y de la corporación.

Professional Consultancy

Figura 3

Incluye a la CA pero concierne a problemas que requieren una metodología diferente para su completa resolución.
Se ponen en juego la teoría y la información. La incertidumbre aparece a nivel metodológico y se requieren juicios personales.
Se establece una relación profesional - cliente, que habilita la interconsulta con otros expertos.
Cuando los resultados trascienden al cliente, pueden generarse conflictos.
No es conocimiento de dominio público.
Por tratarse de situaciones únicas se exige creatividad.
La calidad en la respuesta está asegurada por la calidad de los propios expertos.

En este caso, si se cometen errores, puede ponerse en peligro la continuidad de una carrera.

Post Normal Science

Figura 4

- ✓ Se trata de problemas donde:
  - los hechos son inciertos,
  - hay valores en conflicto,
  - lo que se pone en juego es alto, y
  - las decisiones son urgentes.
- ✓ La CA y la CP participan de este proceso, pero no pueden dominarlo.
- ✓ En estos casos, la incertidumbre puede rondar la ignorancia.
- ✓ Por lo tanto adquiere peso el consenso público y la necesidad de dar participación a todos los que tienen algo que decidir.

2. The inside of the project: the team’s way to a successful interaction.

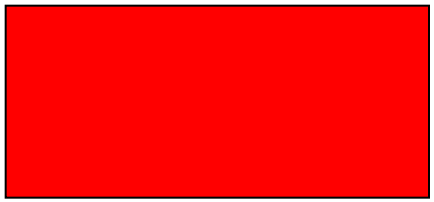
Catastrophes & Social Theory of Risk: Dimensions

DIMENSIONS	INFORMATION REQUIRED
HAZARDOUSNESS Potentiality	Physical- natural aspects of the event or natural process triggering off the catastrophe.
VULNERABILITY Social Structures	Ascertainable socioeconomic aspects of prior condition of the social groups involved.
EXPOSURE Material Impact	Territory and Population Aspects. Population, Property and their distribution.
UNCERTAINTY Perception, decisions	Political and Perceptional aspects within the social groups involved. Values and risks at stake.

Unidimensional Perspectives

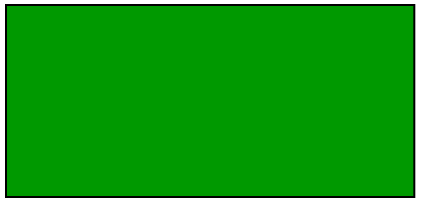
If **hazardousness** prevails, it is common to naturalize everything related to the catastrophe, even the society that has been affected. The explanation and response to it come only from the Natural sciences. The result is a fatalistic position, an immobile resignation.

Unidimensional Perspectives



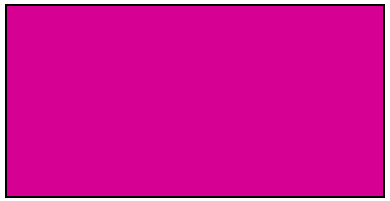
If **vulnerability** prevails, the analysis can be correct, but lacks proposals conducive to solving the catastrophic situation. That can causes falling in a sterile indict trap.

Unidimensional Perspectives



If **exposition** prevails, the problem is explained blaming the lack of hard work and the fact that the proposed solutions are technocratic, hand in hand with engineering business.

Unidimensional Perspectives



If **uncertainty** prevails**,** the problem will be solved opportunistically and the affected people will not believe in the institutions. This will give place to chaotic situations and desperate actions in response.

Risks and Disasters: Dimensions

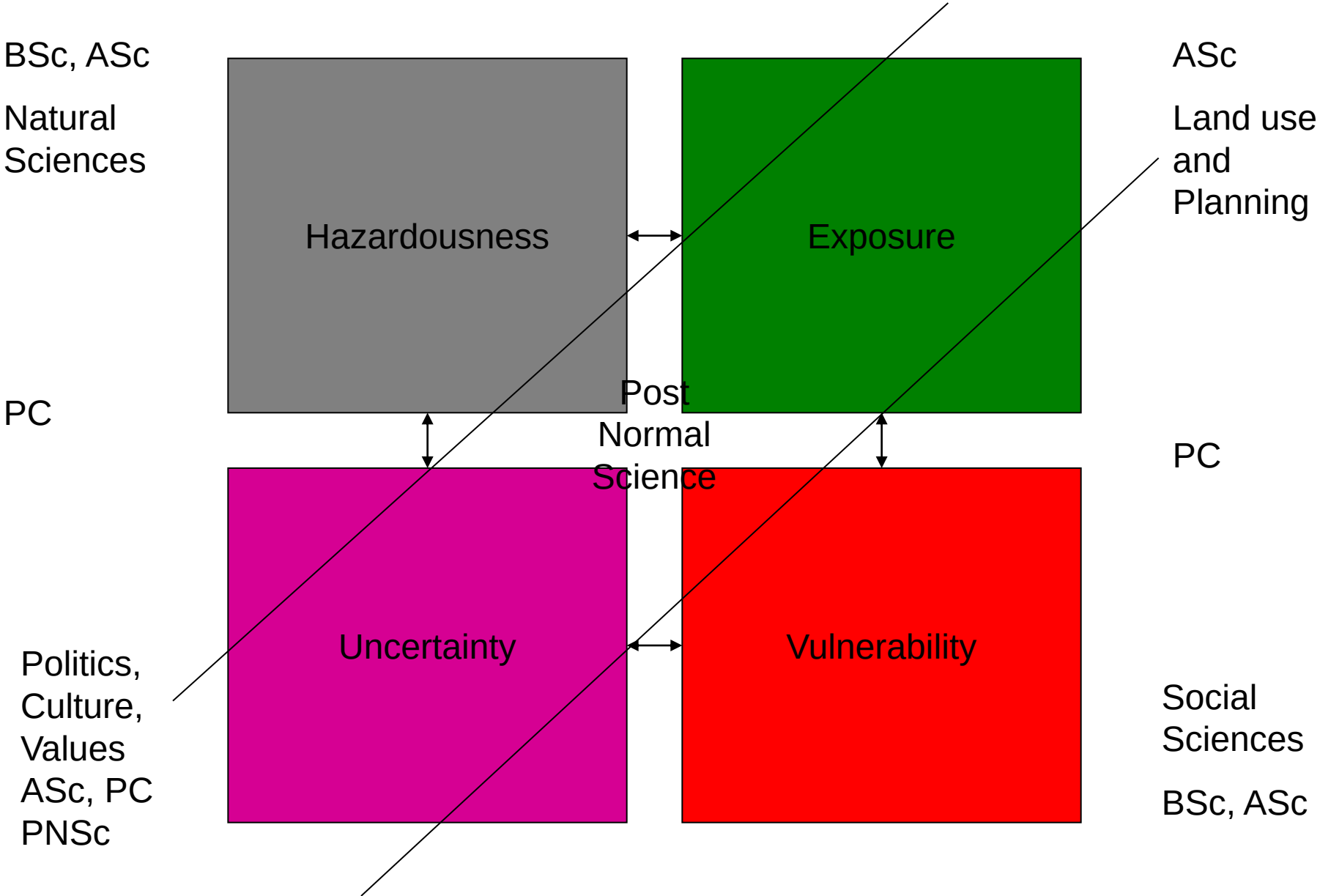
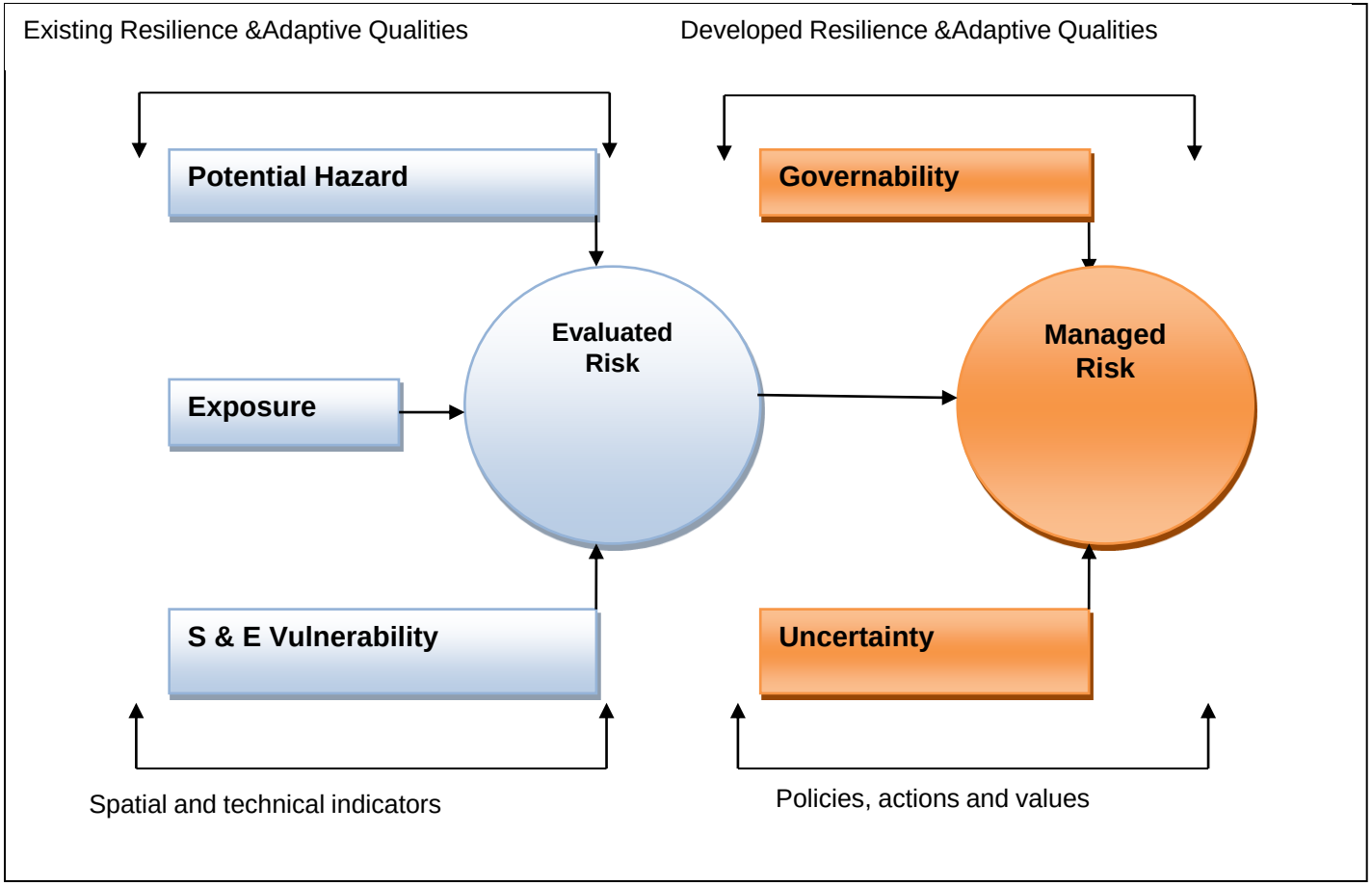


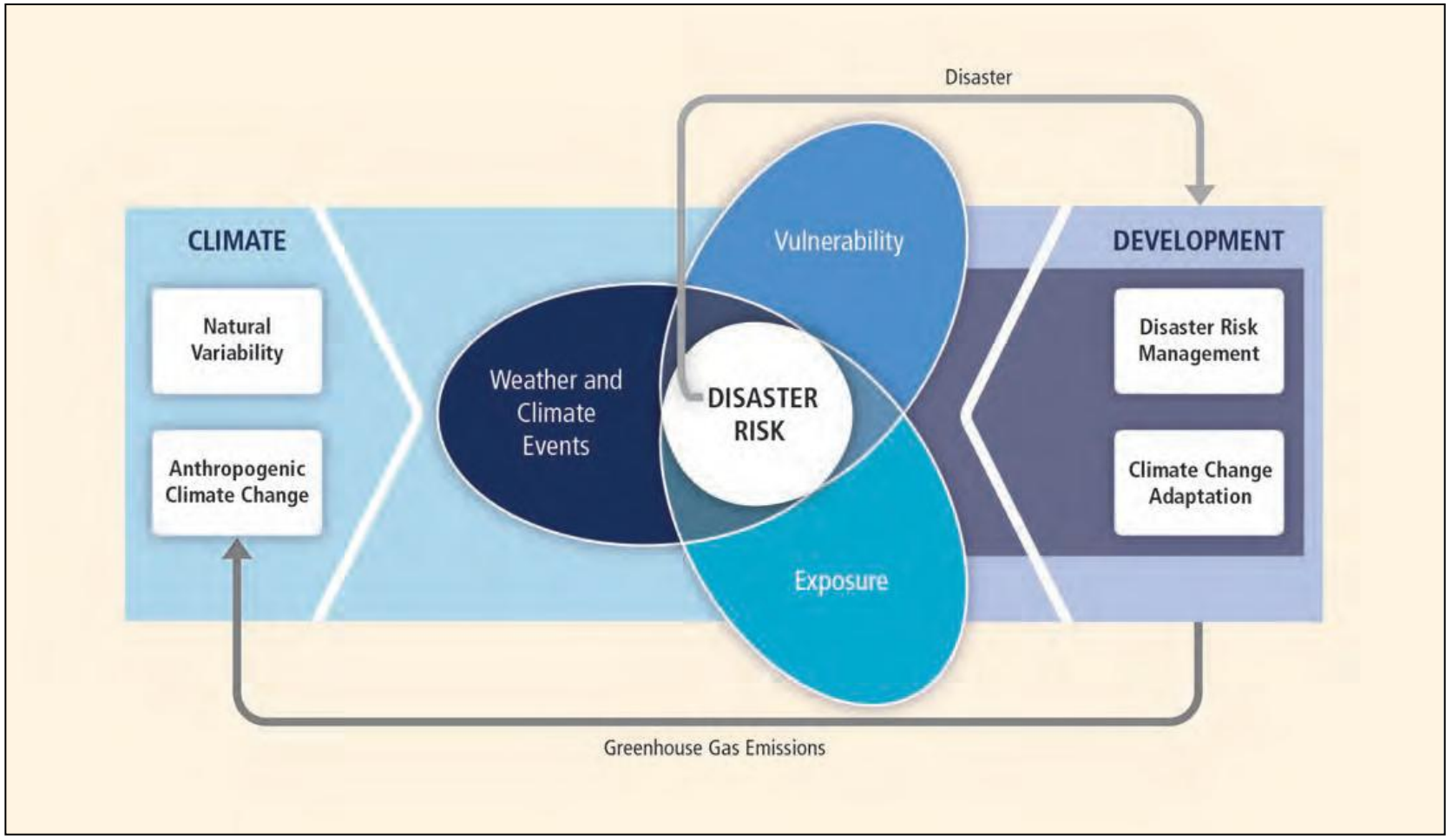
Fig. 2.1 Conceptual model: dimensions of risk



Ref: S & E = Social and economic
Source: Vazquez- Brust et al. (2012); p. 17.

Diego A. Vazquez-Brust, Claudia E. Natenzon, Jerónimo de Burgos-Jiménez, José A. Plaza Ubeda, and Sergio D. López (2012) “Evaluating the Firm’s Environmental Risk: A Conceptual Framework”. In: *Business and Environmental Risks: Spatial Interactions between Environmental Hazards and Social vulnerabilities in Ibero-America*. Vazquez-Brust, Diego; José A. Plaza Ubeda, Jerónimo de Burgos Jiménez and Claudia E. Natenzon, editors. Dordrecht – Nederlands, Springer; Chapter 2, 15-33.

DRM & CCA convergence



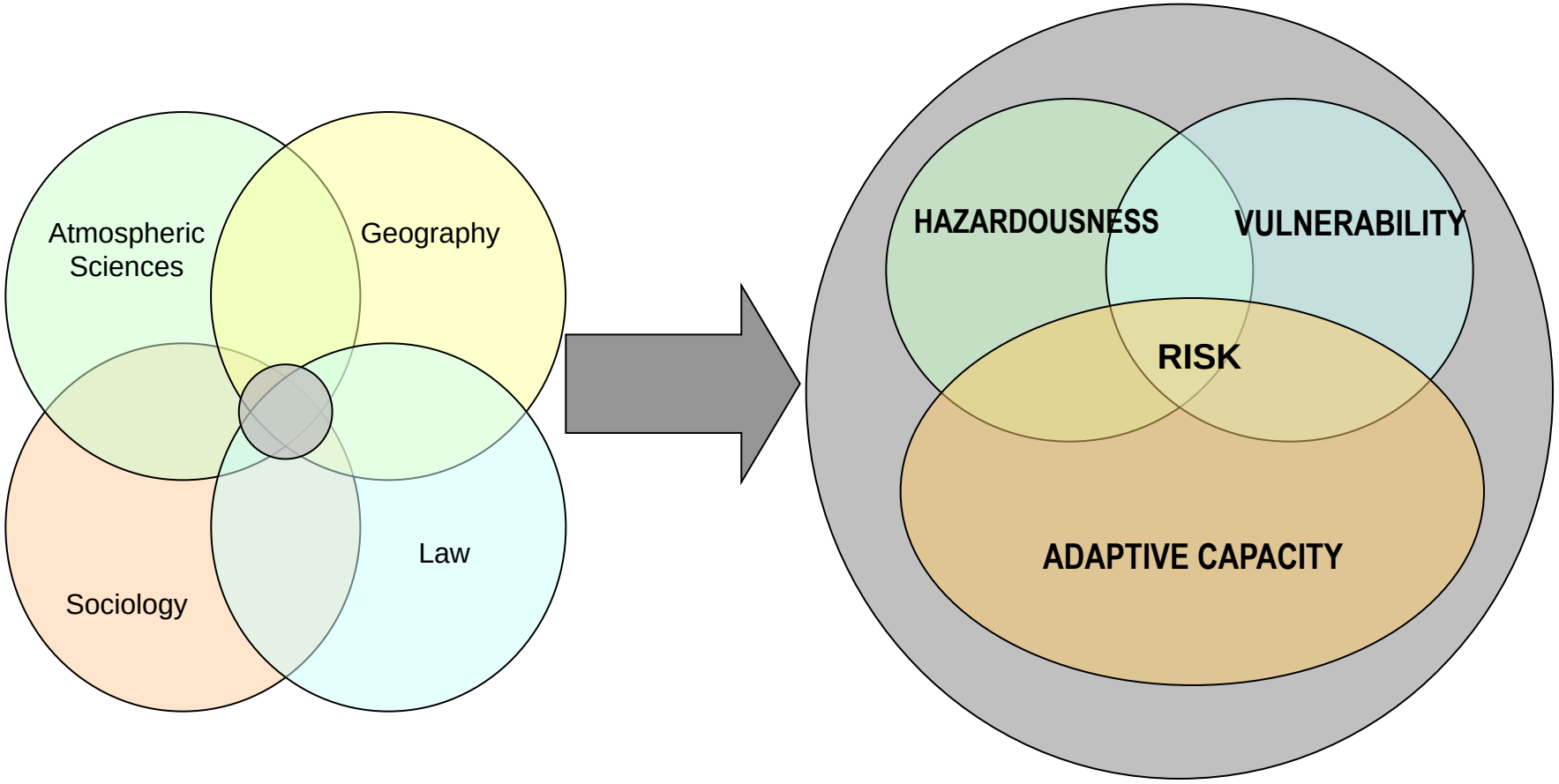
Source: *IPCC, 2012; p.2*

Interdisciplinarity

The process of interdisciplinary knowledge building is recorded, reviewed and reformulated all the time.

We are going from:

To achieve:



3. The outside of the project: relation with stakeholders

INTERRELATION TYPES

1. Consultation
2. Inter-Consultation
3. Network Association

CRITERIA FOR THE SELECTION OF STAKEHOLDERS

1. Pertinence and previous experience in the research subject/problem.

2. Different institutional associations (public/ private, administrative levels, objectives).

3. Opportunity, previous contacts and will.

PREMISES

- ✓ Researchers are actors as well.
- ✓ The complexity of the problem is reflected in the complexity of the project.
- ✓ Project management should undertake such complexity.
- ✓ Fragmentation tends to be overcome through the collective construction of knowledge.

TOWARDS INTEGRATION

The techniques that may lead to a interdisciplinary production of knowledge as a collective construction should be incorporated in the **design of project management**.

DESIGN OF PROJECT MANAGEMENT

It is the field in which the outlined problem can be solved or not:

* through an interdisciplinary mode *inside* the project.
* through interrelations with stakeholders - particularly policy-makers and those affected by policies-, towards the *outside*.

INITIAL CONDITION

Political will –in the sense of "power management" and therefore, decision-making management- to perform the experiment under agreed methodological rules (Poggiese, 2009), beyond applied science and professional consultancy (Funtowicz y Ravetz, 1993).

WORK PROPOSAL

In the beginning, an applied science scheme is set, with consecutive moments with feedback between:

-Construction of **disciplinary** knowledge,

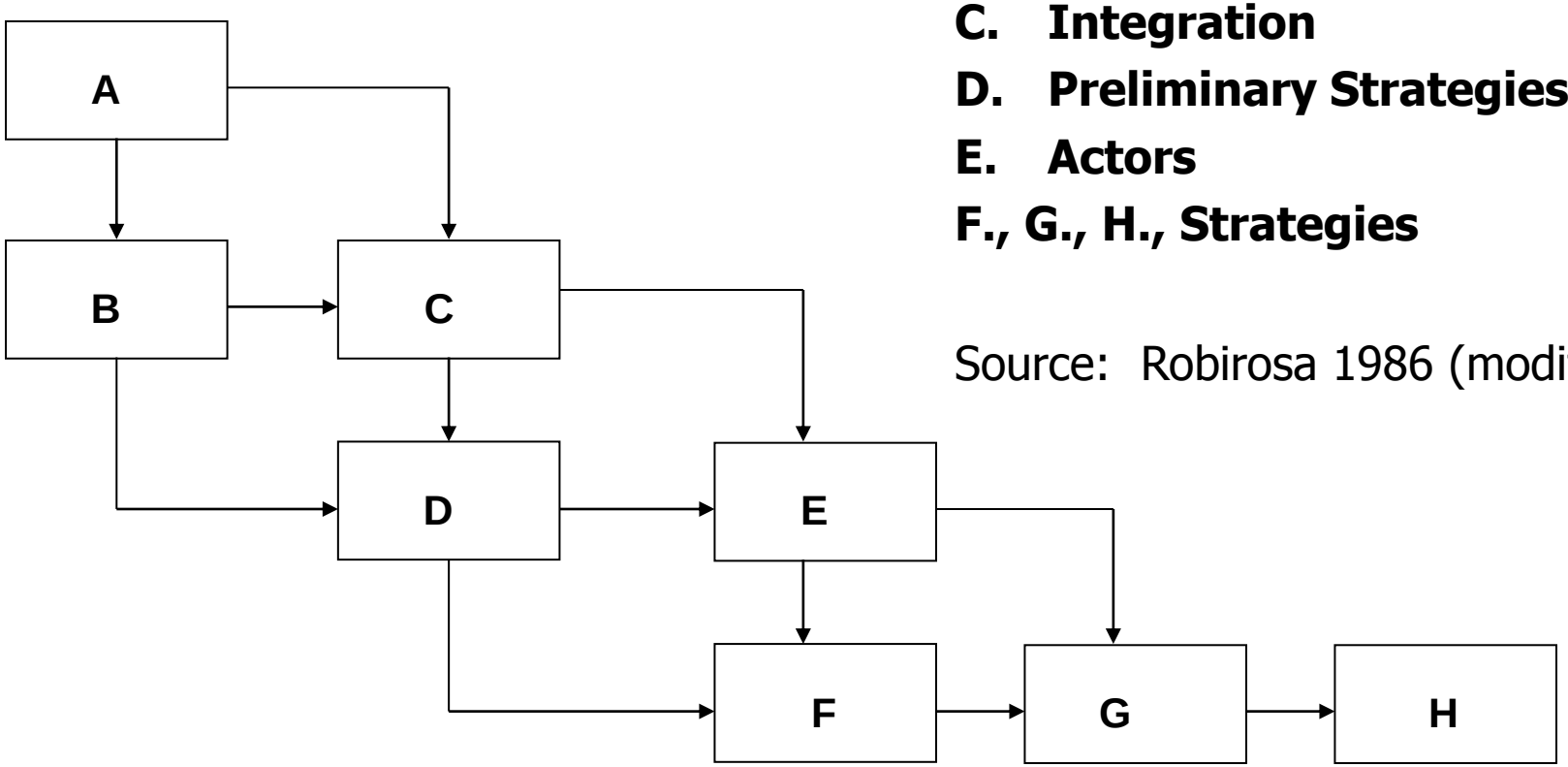
-Construction of **interdisciplinary** knowledge,

-Construction of **inter-consultation** knowledge.

WHAT IS EXPECTED?

The application of these three moments and their interrelations will produce an scenario in which the emergence of association networks is expected (Type 3).

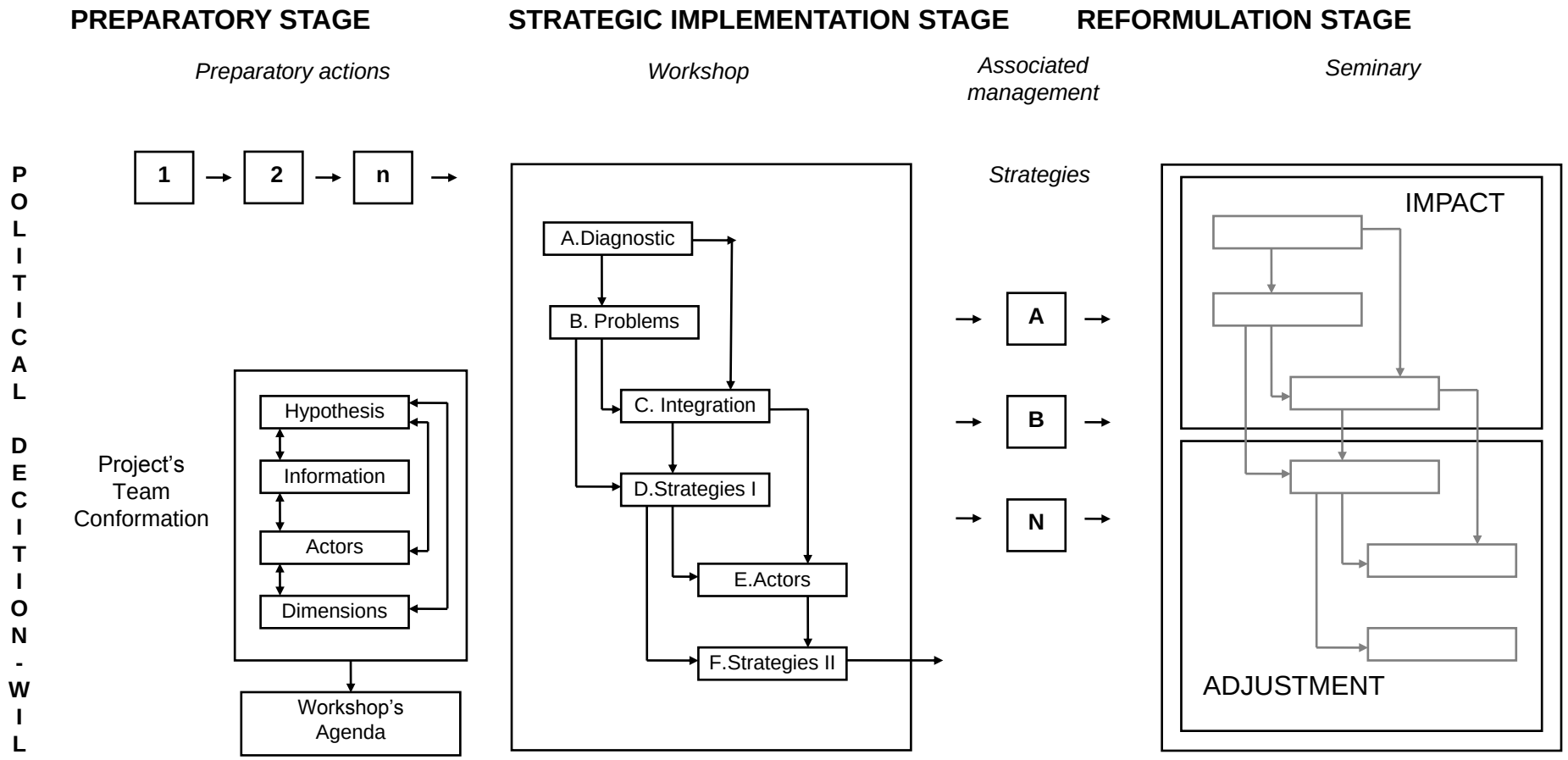
PARTICIPATIVE TOOLS (1/2): Logic sequence



A. Diagnostic
B. Problems
C. Integration
D. Preliminary Strategies
E. Actors
F., G., H., Strategies

Source: Robirosa 1986 (modify) .

PARTICIPATIVE TOOLS (2/2): Methodological cycle



Source: Robirosa 1986, Poggiese, 1994.

- Prevention is possible -

Thank you so much!

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