

Objectives, motivations and strategies of ecological restoration

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Definición (Soc. Ecological Restoration
International, 2002 www.ser.org/Primer)

Procesos de **ayudar** a la **auto-reparación** de un **ecosistema** que ha sido **degradado, dañado o destruido.**

(Mediterranean **Socio-ecosystems**)

La restauration écologique :

*“le processus d’assister l’auto-régénération
des écosystèmes qui ont été dégradés,
endommagés ou détruits.”*

(www.ser.org/Primer, 2002)

Ecological restoration :

“the process of assisting the recovery of ecosystems that have been degraded, damaged or destroyed.” (www.ser.org/Primer, 2002)

Rehabilitation focuses on processes, functions;

Restoration aims at restoring content (biodiversity) as well as processes....



L'Homme peut-il refaire ce qu'il a défait?

¿Quelles références?

**¿Quels niveaux écologiques –
parcelle (m²), rive (km), bassin
versant ou paysage (km²),
écoregion, biosphère,....?**

Les piliers

I. Concepts, objectifs, modèles

II. Outils de travail – biologique et mécanique

III. Méthodes d'évaluation et de suivi de systèmes entiers et ouverts

IV. Intégration, Cooperation, ...



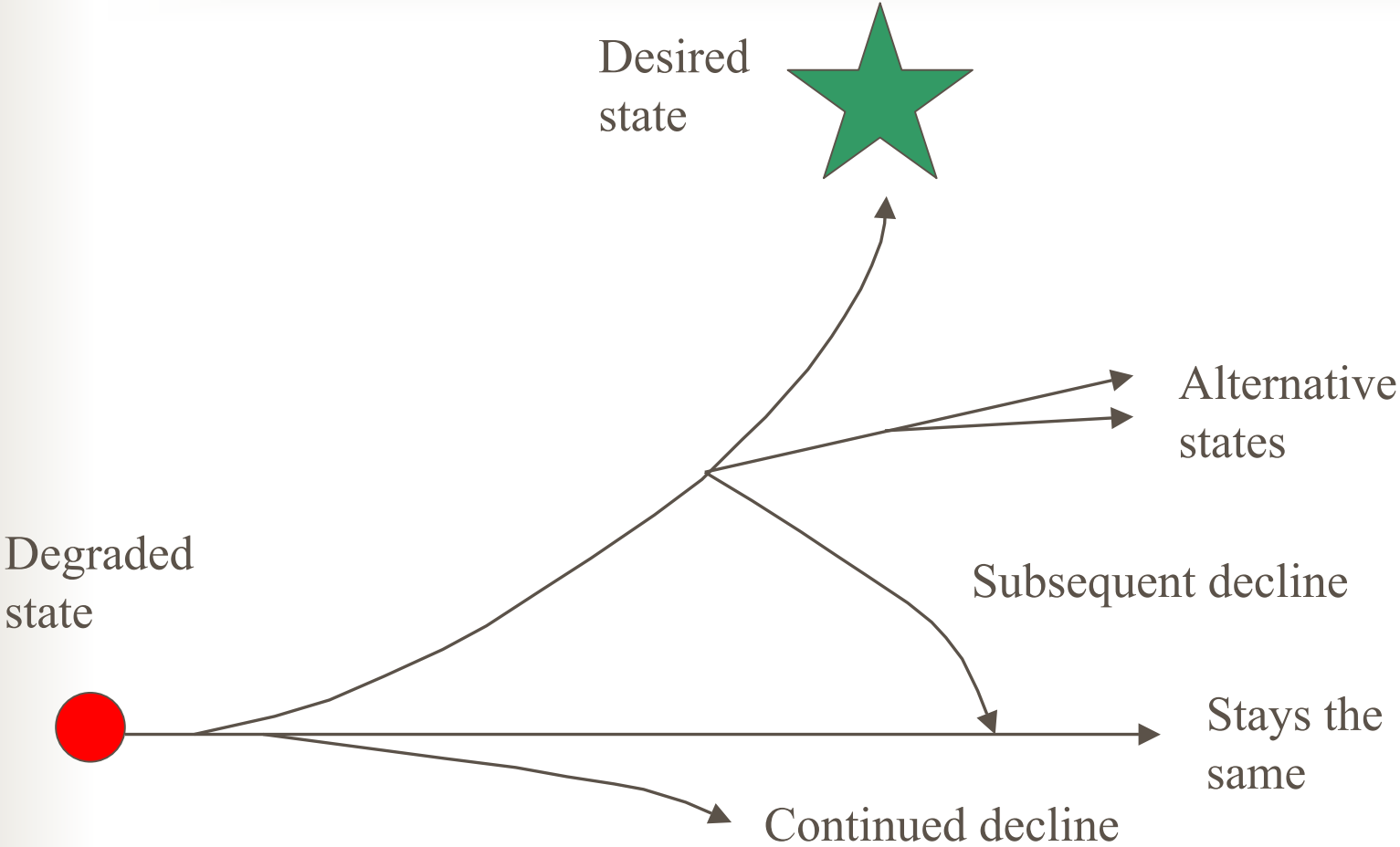
WHY Restore?

Approach-A: **Recover a certain *authenticity* – historical or natural.**

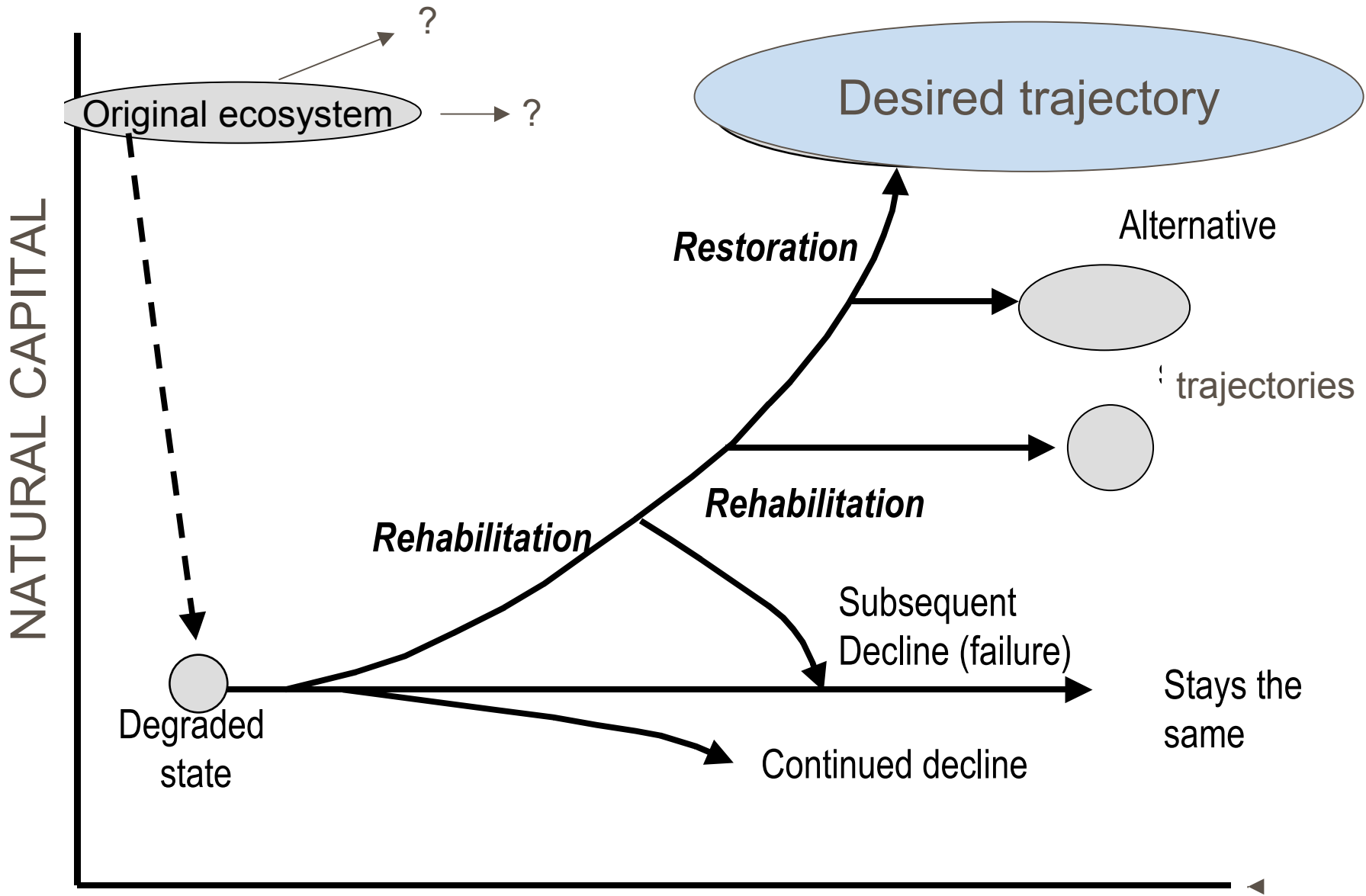
Drivers basically spiritual, cultural, aesthetic, pacific, etc.

(Source: Hobbs & Norton, 1996)

Level of complexity/function

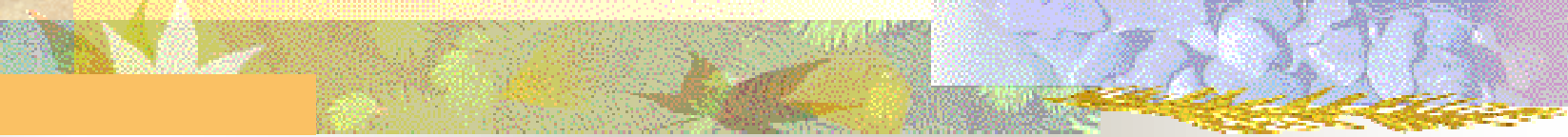


Time



Time

(Aronson & Milton, in press)



Approach B: Preserve or even augment *renewable natural capital*, i.e., goods and services of ‘natural’ and socio-ecological systems on which we all depend.

>> Drivers pragmatic & idealistic, varying among cultures.

economic

social

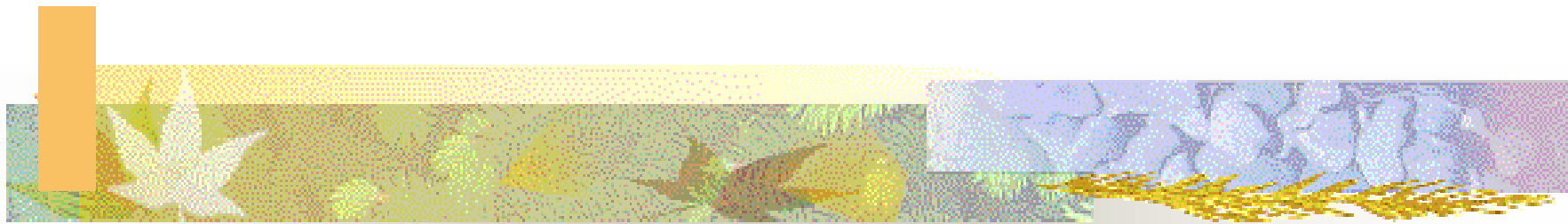
**Restoration
of degraded
ecosystems**

ecologic

cultural

(Jackson *et al.*, 1995; Higgs, 1997)

RESTORING NATURAL CAPITAL: AN ECOLOGY/ECONOMICS CONSILIENCE PLATFORM



**J. Aronson, J. Blignaut,
A. Clewell and R. Costanza**



Ecosystems (incl. biodiv.) can also
be called

Natural Capital.

Natural goods and services
represent the ***interest*** (= flows) earned on
Natural Capital (= stock).

NORTH

Exporters of technology and manufactured goods.

Exporters of economic models

Colonizers of southern lands;
old rich millions.

High per-capita consumption;
generators of greenhouse gas.

Theory-driven research;
scientific knowledge.

Biodiversity poor.

ECONOMIC DIVIDE

Exporters of
raw materials.

Importers of economic
development models

Formerly colonized;
young poor billions.

Low per-capital consumption;
recipients of climate change.

Traditional knowledge
and action-driven research.

Biodiversity rich.

SOUTH

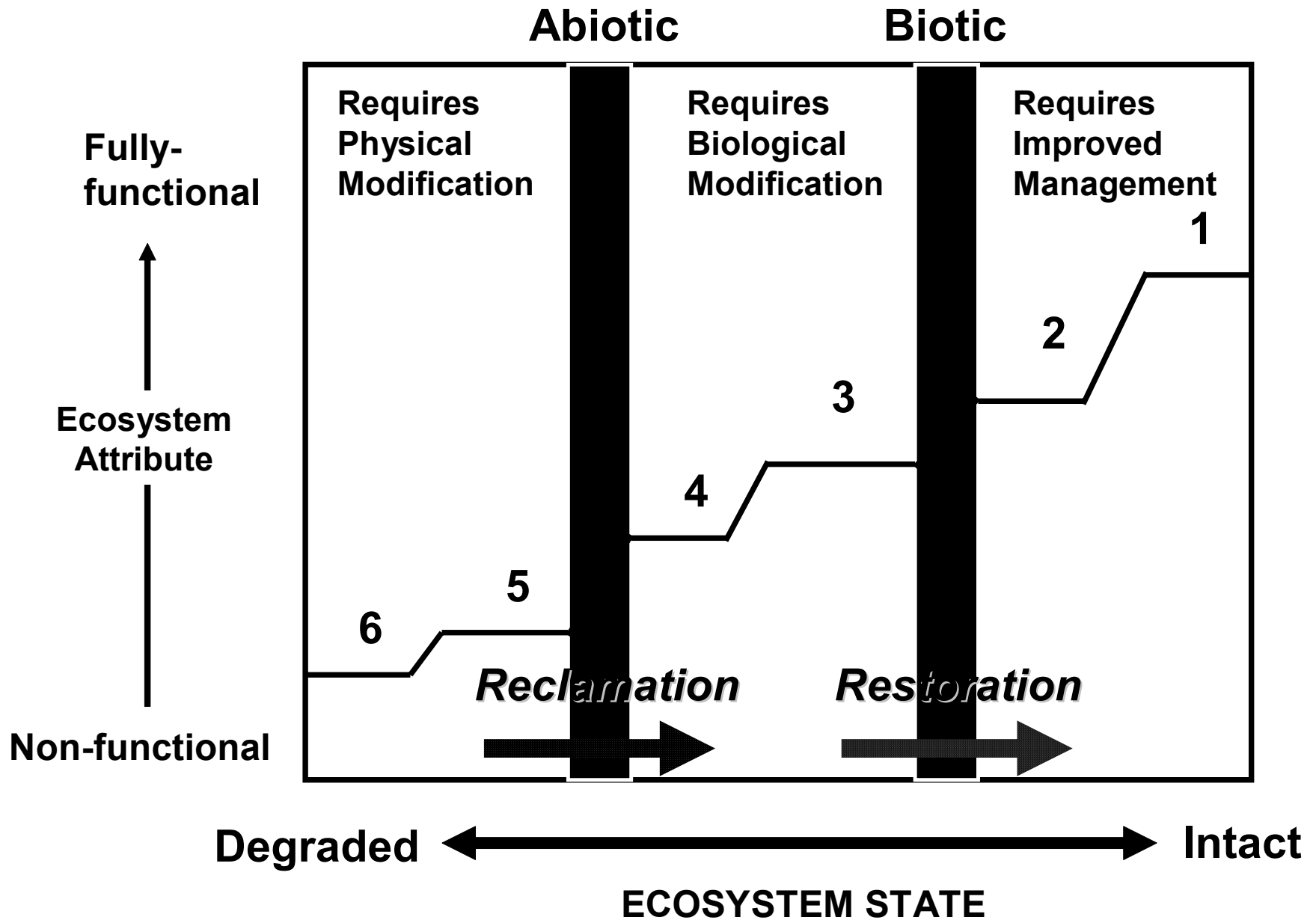
Les piliers

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(Harris & Van Diggelen, 2005; Whisenant 1999)



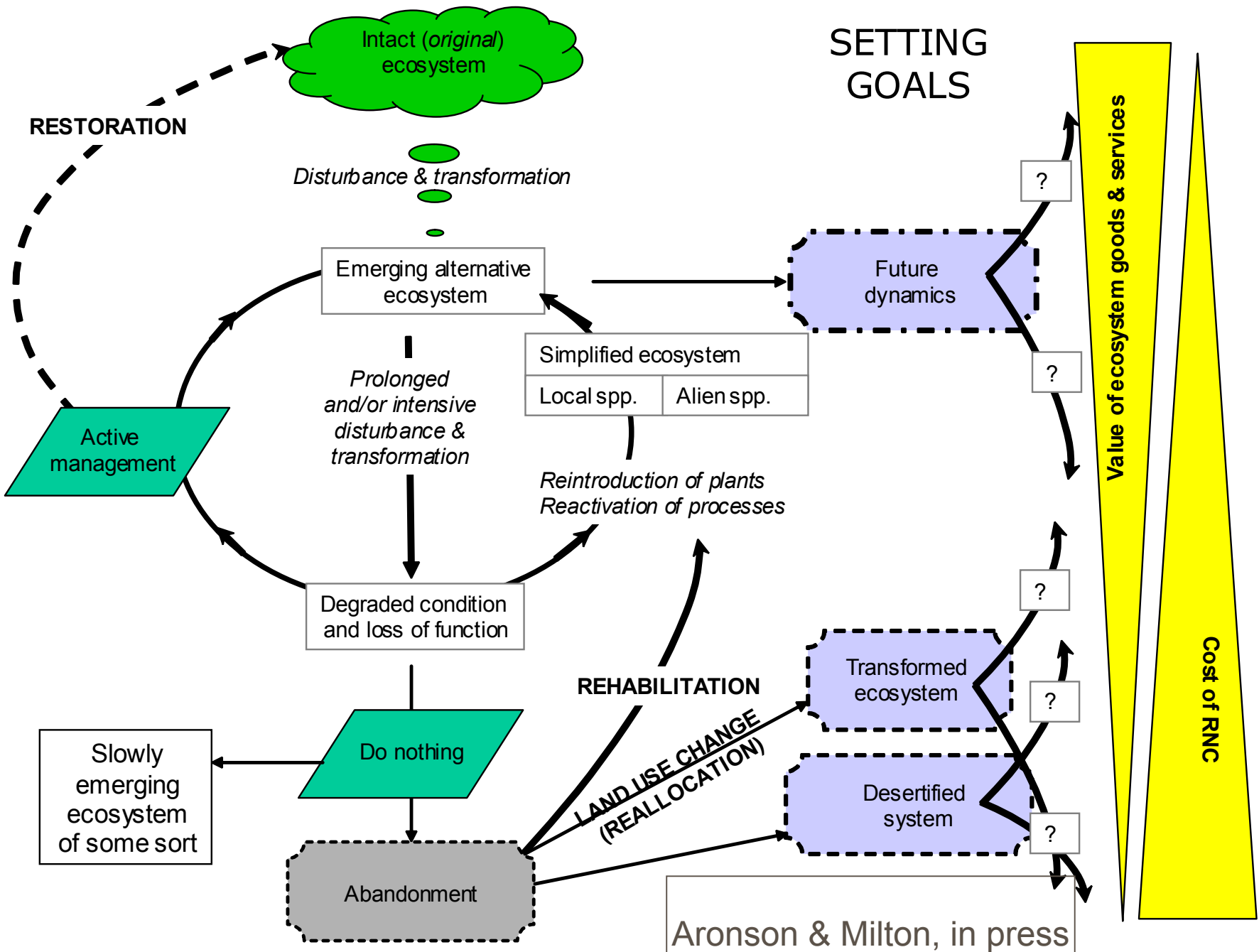
* Plantations multi-strate vs.
mono-strate

* Espèces « *natives* » vs. espèces
introduites

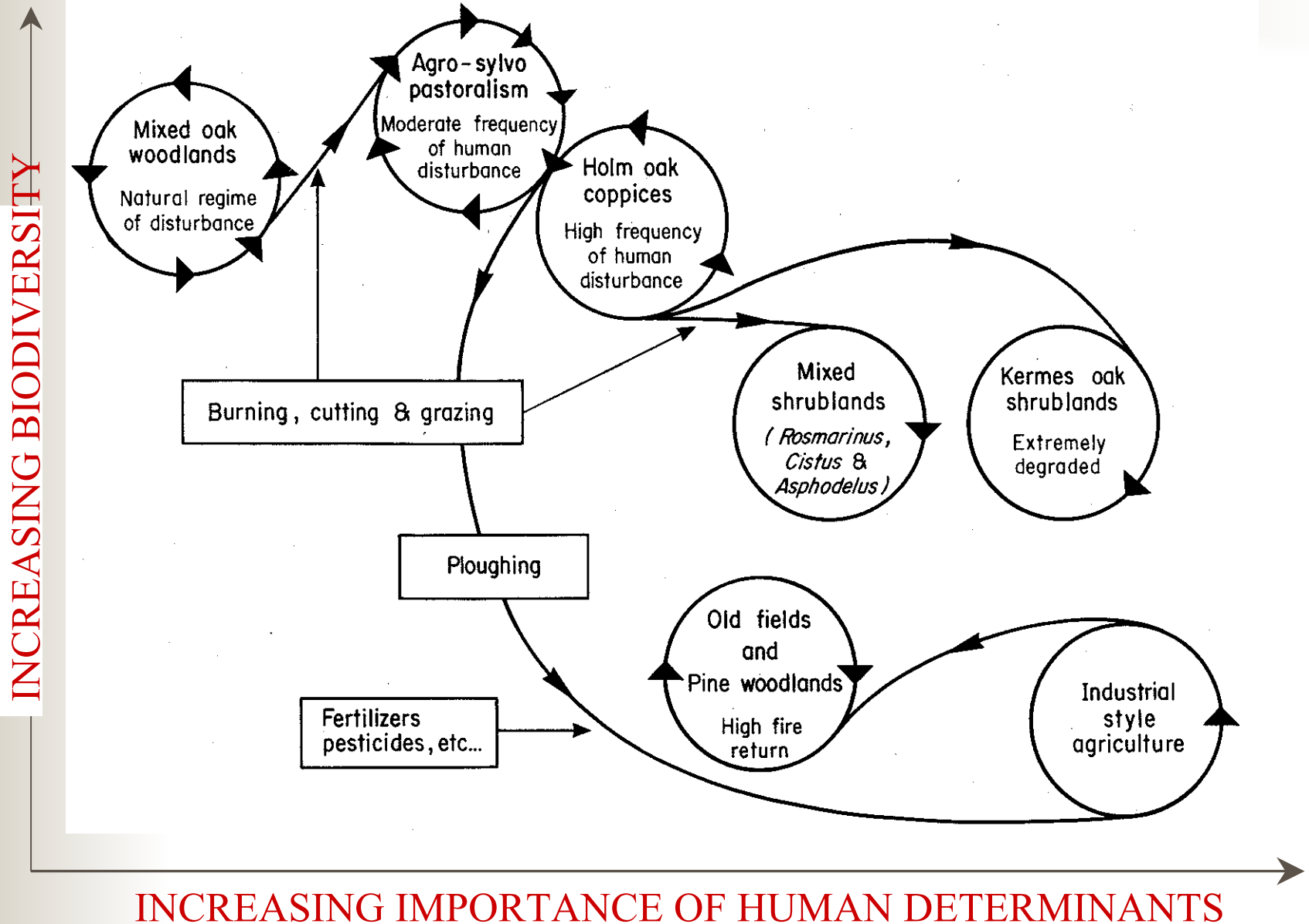


Landscape perspective

- LAMB, TONGWAY, LUDWIG,

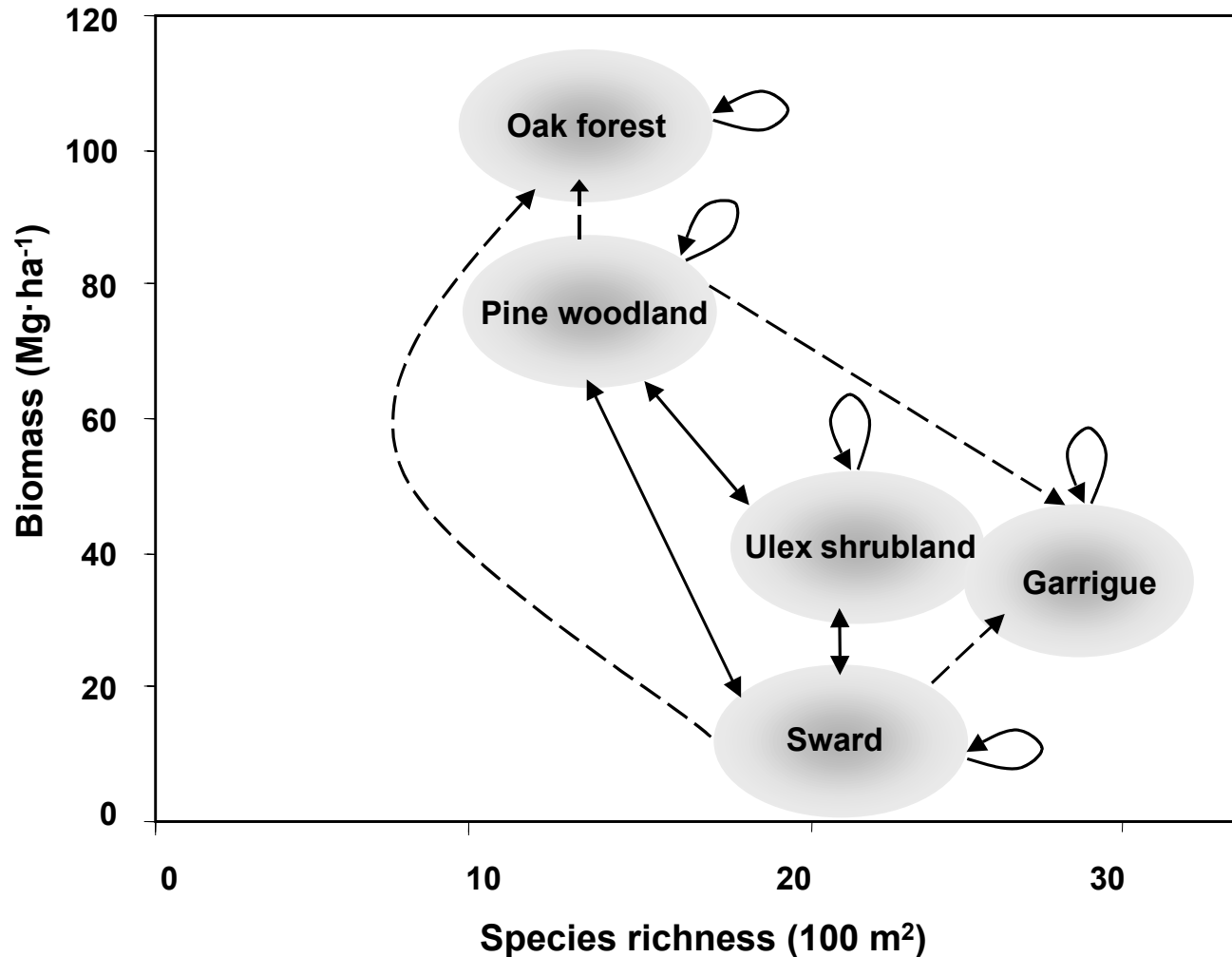


Source: Blondel & Aronson, 1999

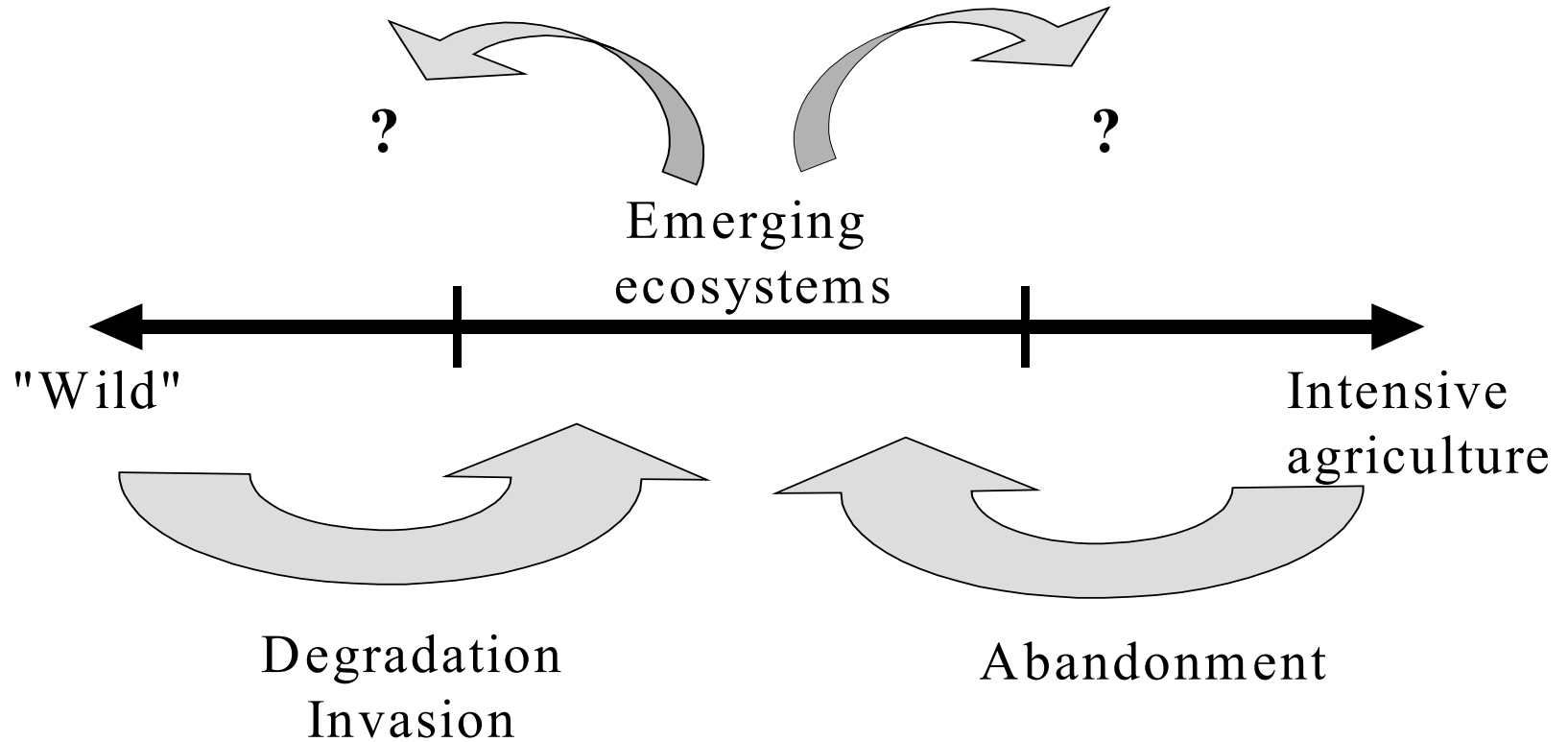


Some successional pathways in eastern Spain

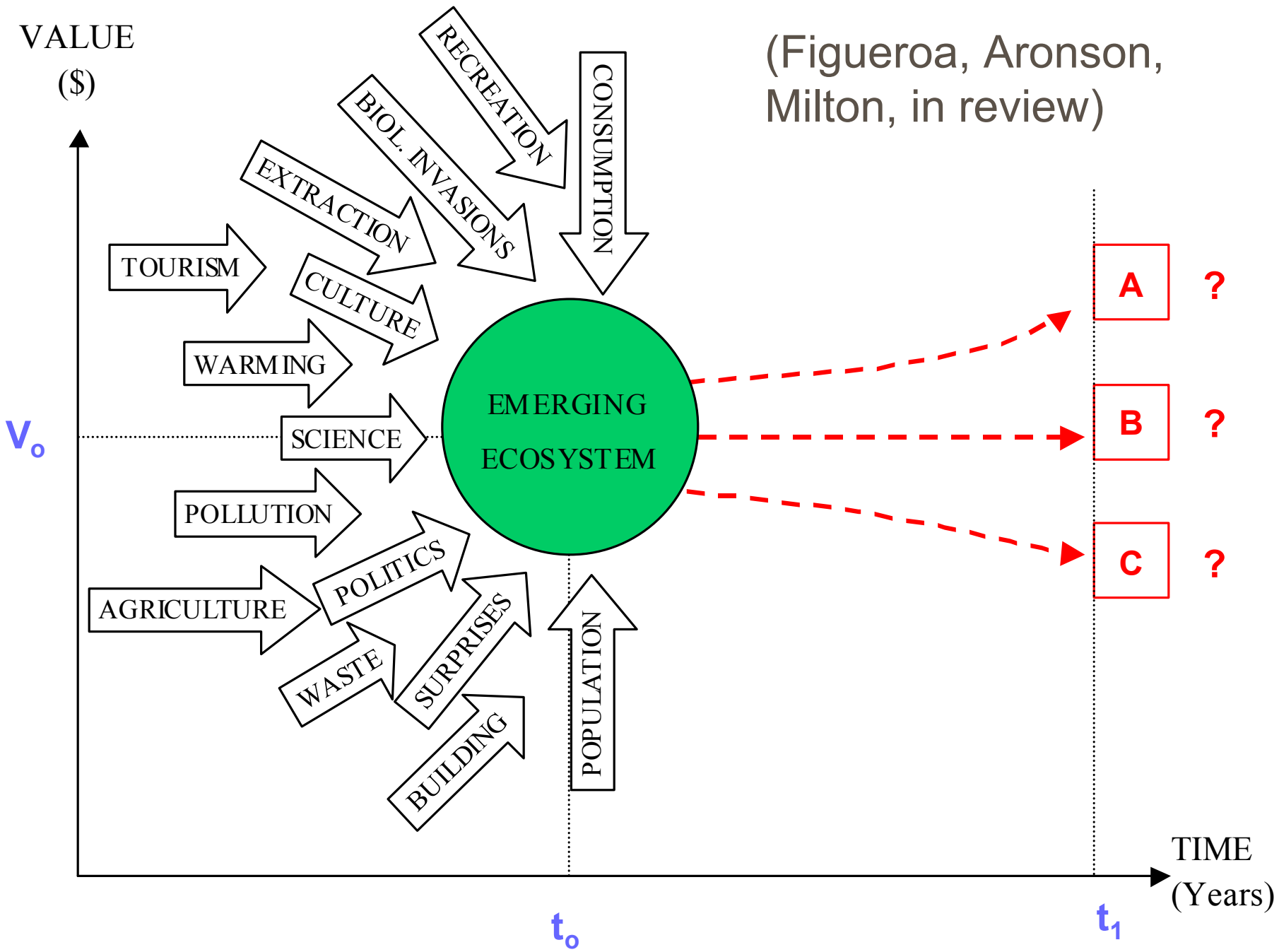
Dashed lines represent slow or rare pathways. (Vallejo, Aronson, Pausas & Cortina, 2005).



Emerging ecosystems



R. Hobbs et al. (in review)



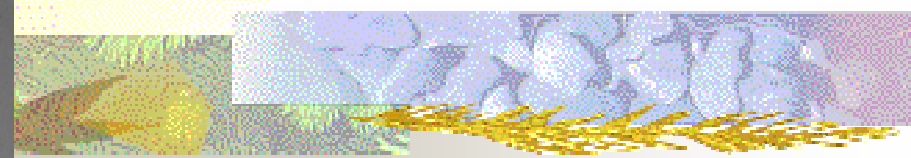
(Figueroa, Aronson, Milton, in review)

Références

.....historiques et autres.....

“A fundamental aspect of ecosystem restoration is learning how to discover the past and bring it forward into the present.”

Egan & Howell (2001) *The Historical Ecology Handbook: A Guide for Restorationists*



Brusquet Valley, southern France, before and after a RTM project (Restauration de Terres de Montagne (1877) and a century later (1995) (photos: D. Vallauri – WWF-France)

? Which reference system ?



Four “types” of ecological references (White & Walker 1997)

- **Different place, same time
(refuges)**
- **Same time, different time
(archeology)**
- **Different place, different time**
- **Same place, same time (auto
référence)**



Reference dynamics: Reconstructing ecological processes to restore natural variability

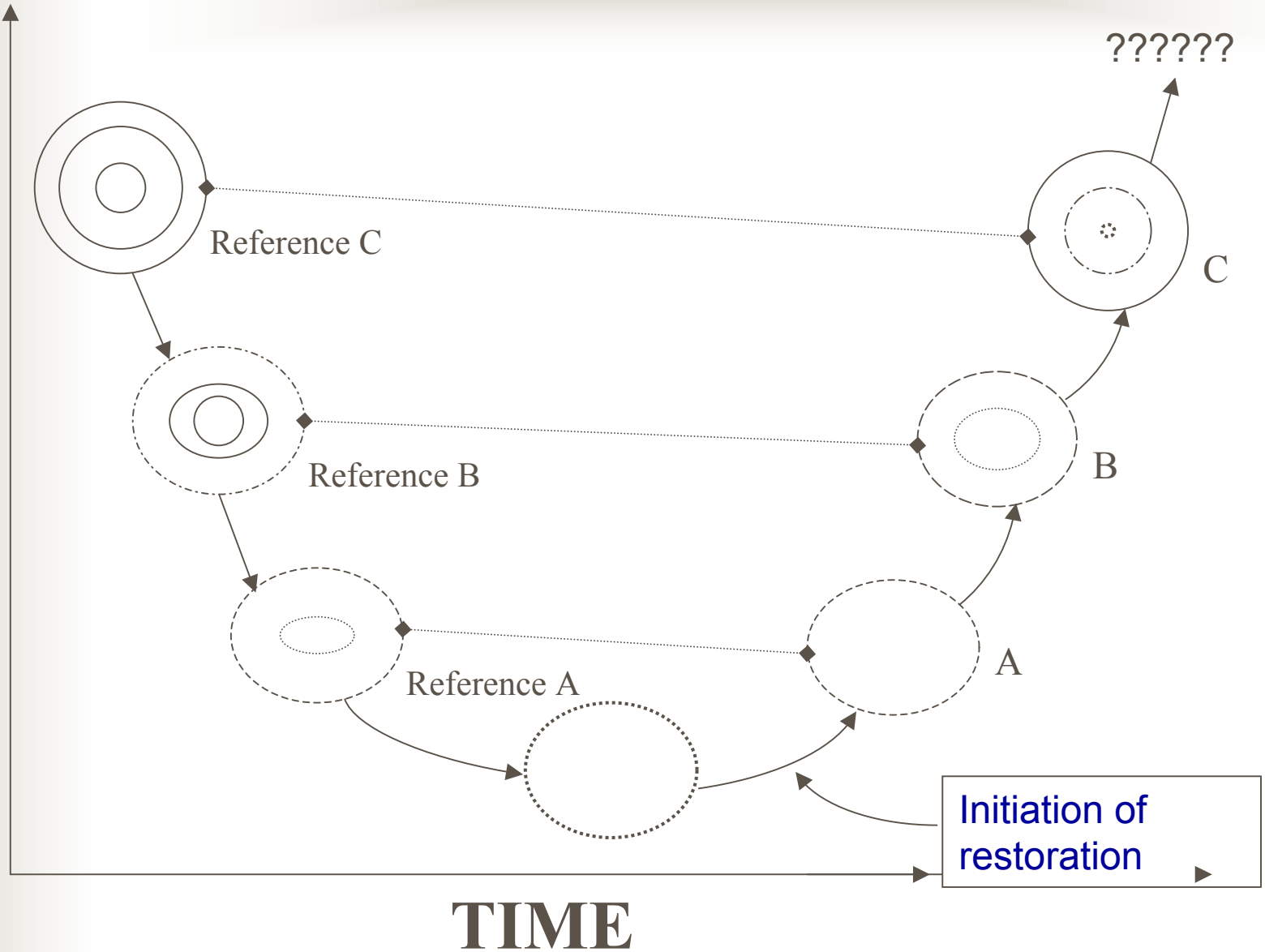


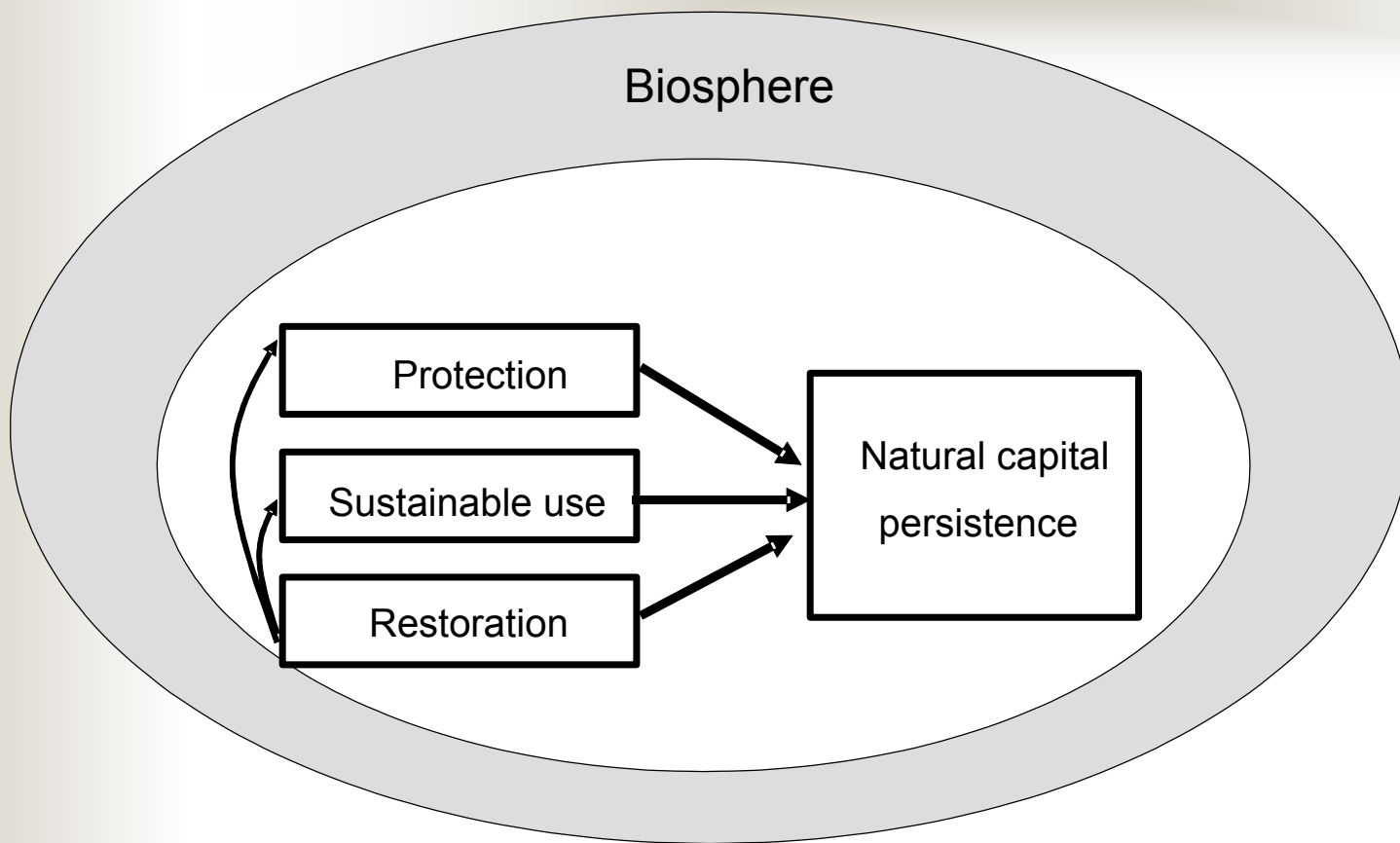
Don Falk
Laboratory of Tree-Ring Research
University of Arizona
Tucson, Arizona, USA



(Source: Alonson & Van Andel, in press)

Natural capital





Milton and Aronson in review. *Restoring Natural Capital: Views from the South*. Island Press.