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Specific characteristics of innovative design in agriculture

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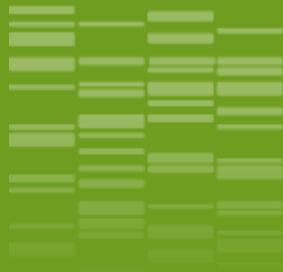
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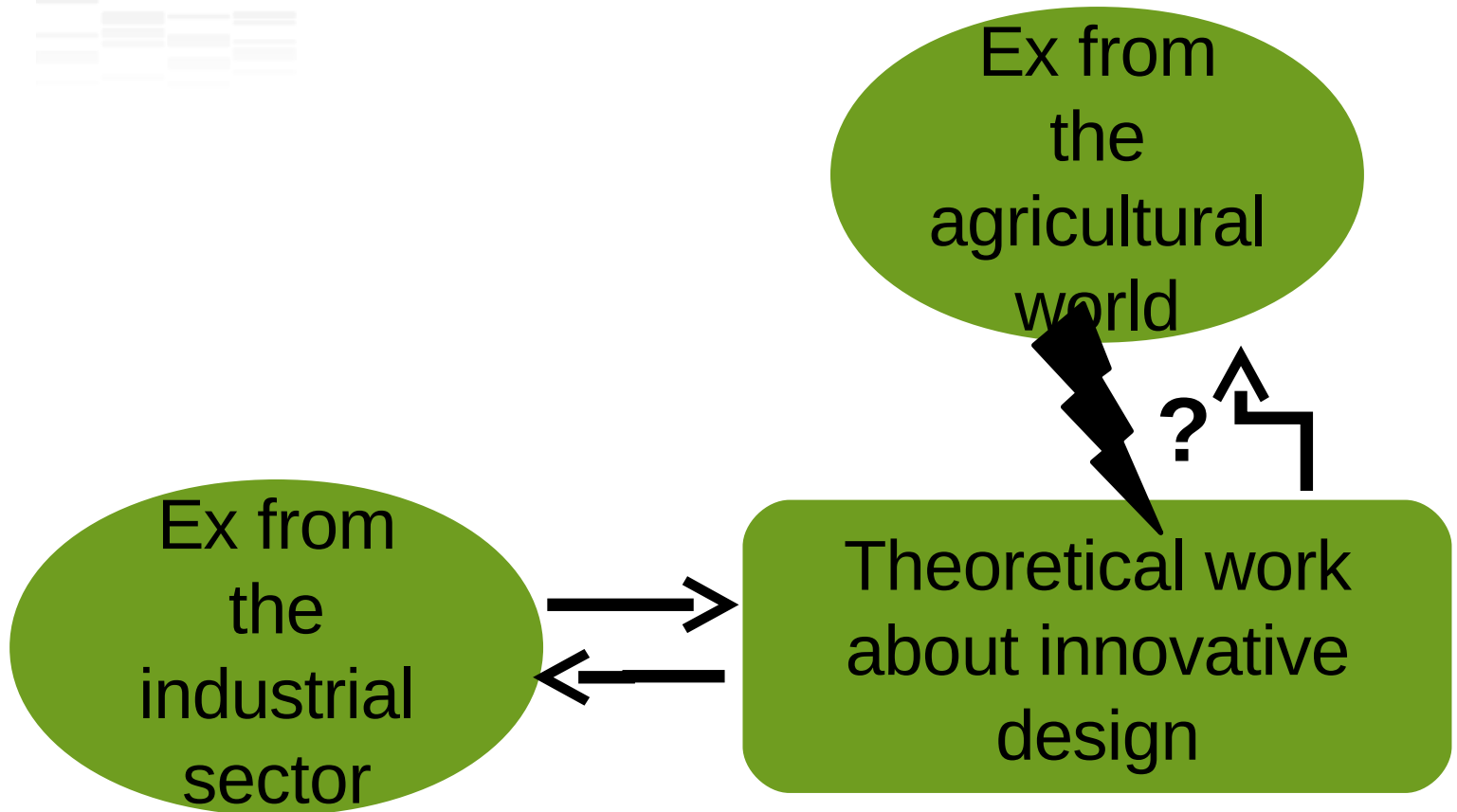
Specific characteristics of innovative design in agriculture

How may design in agriculture challenge design theory?



Lorène PROST, Elsa BERTHET, Marianne CERF, Marie-Hélène JEUFFROY, Julie LABATUT, Jean Marc MEYNARD

Introduction



Introduction

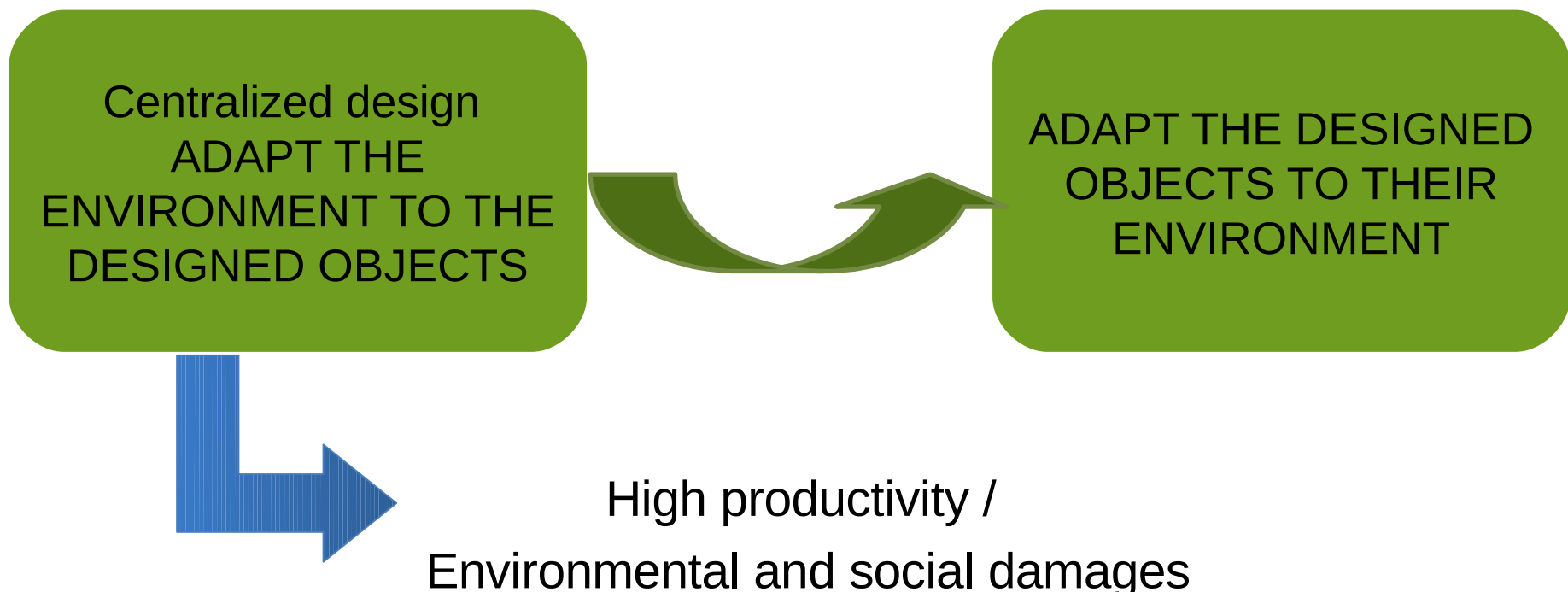
- ❖ Why do we speak of **INNOVATIVE DESIGN** in agriculture?
 - Agriculture is facing new challenges

XXth CENTURY

Centralized design
ADAPT THE
ENVIRONMENT TO THE
DESIGNED OBJECTS

TODAY

ADAPT THE DESIGNED
OBJECTS TO THEIR
ENVIRONMENT



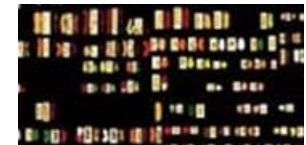
High productivity /
Environmental and social damages

Introduction

- ❖ **Why do we speak of INNOVATIVE DESIGN in agriculture?**
 - Agriculture is facing new challenges
 - This requires innovative design as defined by Le Masson et al (2006):
 - Revise the identity of objects (objectives, performance criteria)
 - Revise the design regime and organization



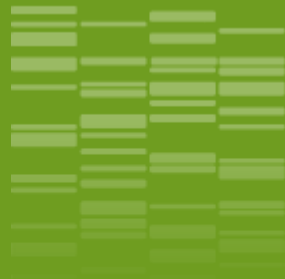
Agro-ecology



Genomics

Introduction

- ❖ **What does « innovative design » imply when it comes to biotechnical systems?**
- ❖ **Focus on the nature of our objects + on the characteristics of our design organization**



_01

Designing biotechnical systems

What is “designed” in agriculture?



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- Varieties / Animal breeds



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- Processes: cropping system, livestock system, farming system = combination of practices



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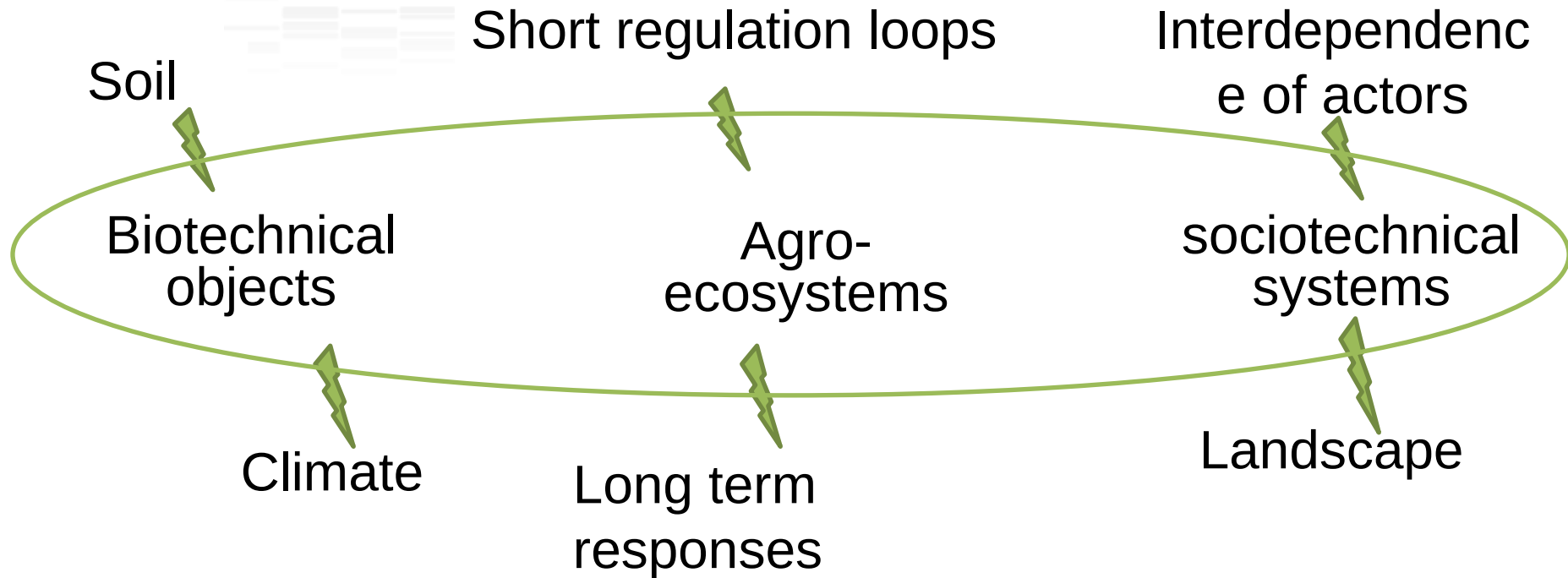
- Landscapes

- Decision support tools



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Objects interacting with their environment



1. Constant evolution in link with the environment

DESIGN IS ONTOLOGICALLY INCOMPLETE
let space for the unpredictable interactions with
the environment

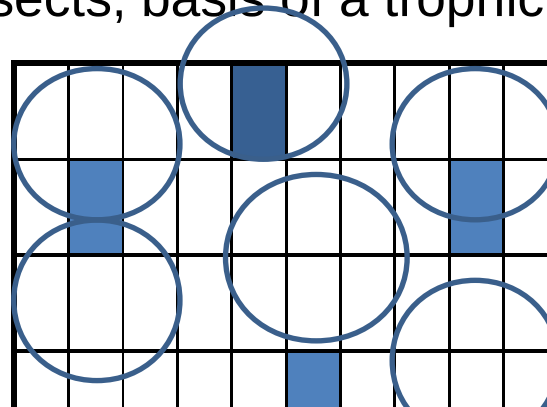
Objects interacting with their environment

2. Designing at different scales

Ex: biodiversity erosion due to agricultural intensification in a cereal crop plain

Scale : agroecosystem (includes ecological processes, regulation loops, interdependence between farmers)

Grasslands: reproduction of insects, basis of a trophic web



Landscape mosaic

DESIGN IS ONTOLOGICALLY SYSTEMIC
Defining borders: strong consequences on “what”
is designed

Objects often related to common goods

❖ In agriculture, many objects are managed as common goods

▪ Example : ANIMAL BREEDS

- are designed thanks to scientific tools, farmers' practices, processing industries...

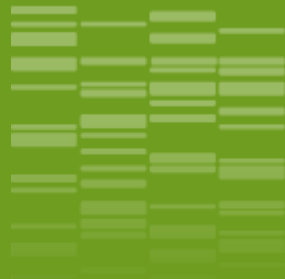
- BUT are farmers' collective property

⇒ The design process cannot be “privatized” and managed by a single organization

- Designing such a resource => designing the governance structure to go with it, involving distributed « owners »



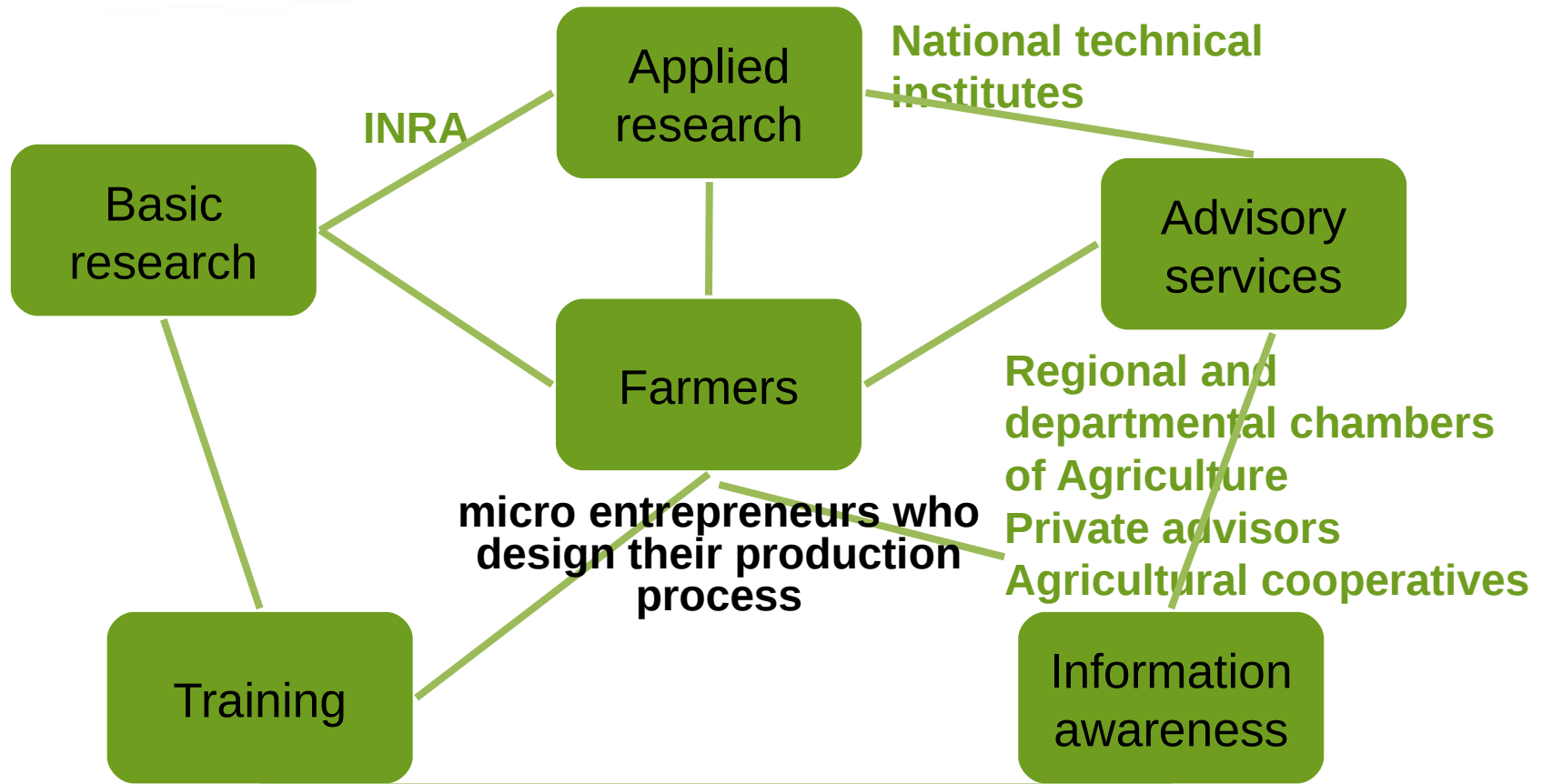
DESIGNING OBJECTS AND ORGANIZATIONS



02

Distributed design as an organizational characteristic of the agricultural sector

Design knowledge and design actors are distributed in agriculture



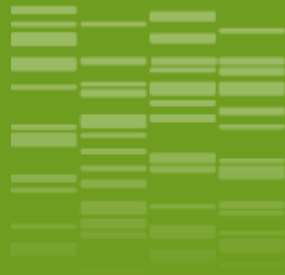
Towards new design organizations

- ❖ **Taking into account more stakes and wider scales requires the creation of new design collectives**

Ex: collective design of a sustainable cereal cropped agro-ecosystem (grasslands)

- Who can be in charge of grassland distribution management?
- An agricultural cooperative created an ad-hoc group :naturalists, water syndicates, local authorities, farmers, extension services
- Their aim : solve the conflicting situation by exploring the potential trajectory of the agro-ecosystem





04

Discussion: how to learn more about design theory in studying agricultural systems and objects?

Discussion

1. **Put into question design categories (natural/designed, breeds/brands, etc.)**
2. **Importance of making more visible collective dynamics, conflicts and controversies in design reasoning**
3. **Use the C space to catch the political dimension of design**



Discussion

4. Importance of “use” situations that would not be reducible to knowledge elements

- Interactions with environment □ some unknown and unknowable in the design process □ large part of design is done in “use” situation
- In CK theory, the “use” situation is described in K space.

specificities ? Long time, life adaptability

- Add a third space to understand how the “real” interacts with knowledge and concept in the design process?





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Thank you for your attention



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