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Digitalisation in the ecologisation trajectories of agriculture in France - The role of cooperatives

An institutional economics analysis

Meso-approaches to agro-ecological transition

Eléonore SCHNEBELIN – 18/03/2024

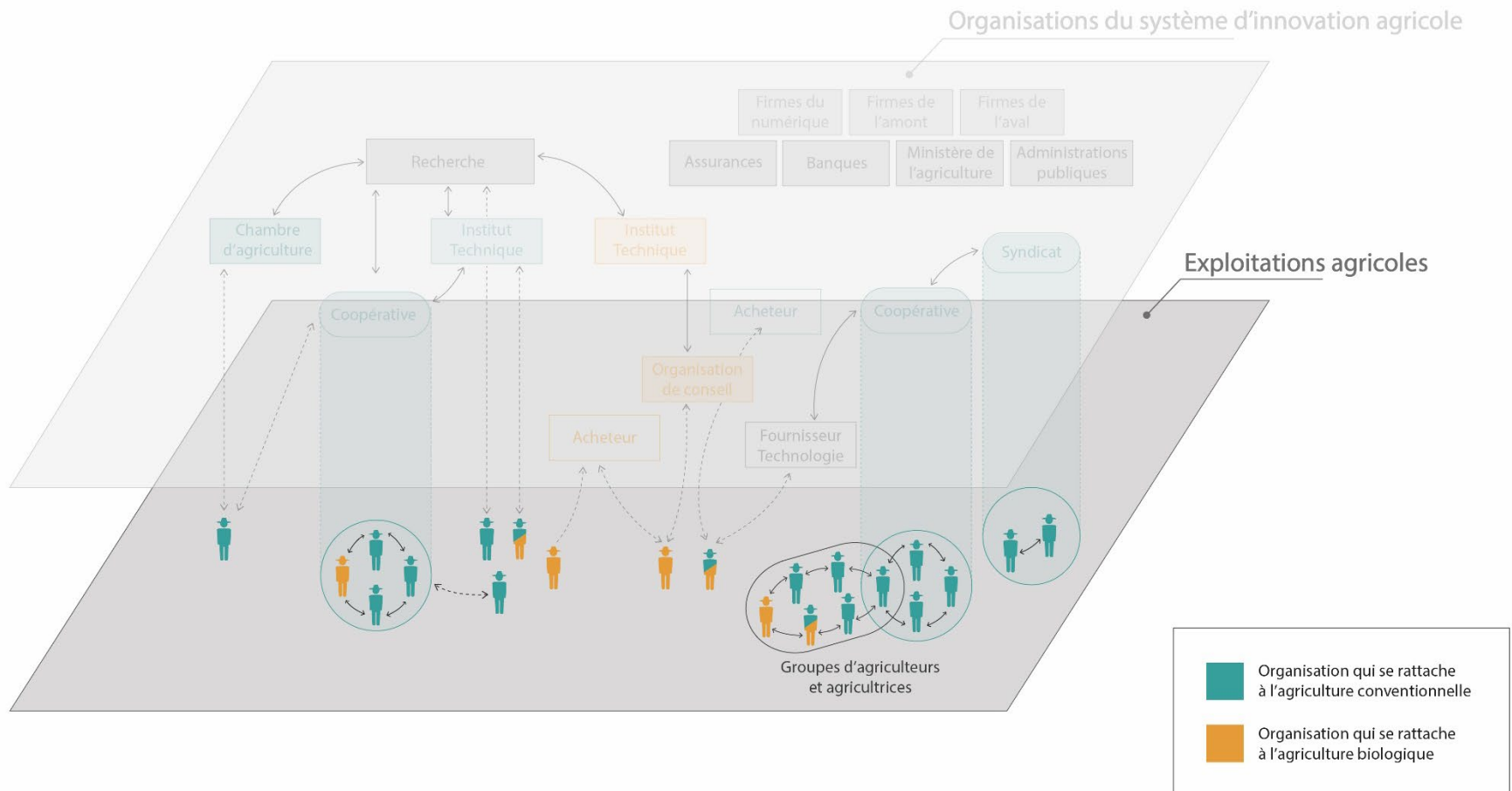
Context of the research

- A techno-scientific promise of « **digital agriculture** » that is presented as a solution that goes beyond agricultural models and that will address environmental issues of agriculture (*Martin and Schnebelin, 2024*)
- The link between digitalisation and ecologisation is the subject of debate and controversy (*Wolf and Buttel, 1996 ; Carolan, 2017 ; Bronson, 2018 ; Rotz et al, 2019*)
- A dimension of the controversy focuses on the compatibility between digitalisation and the diversity of **agricultural models** :
- This technological development could reinforce and lock the current agricultural “conventional” model → maintain its negative effects, rather than promote its agro-ecological transformation



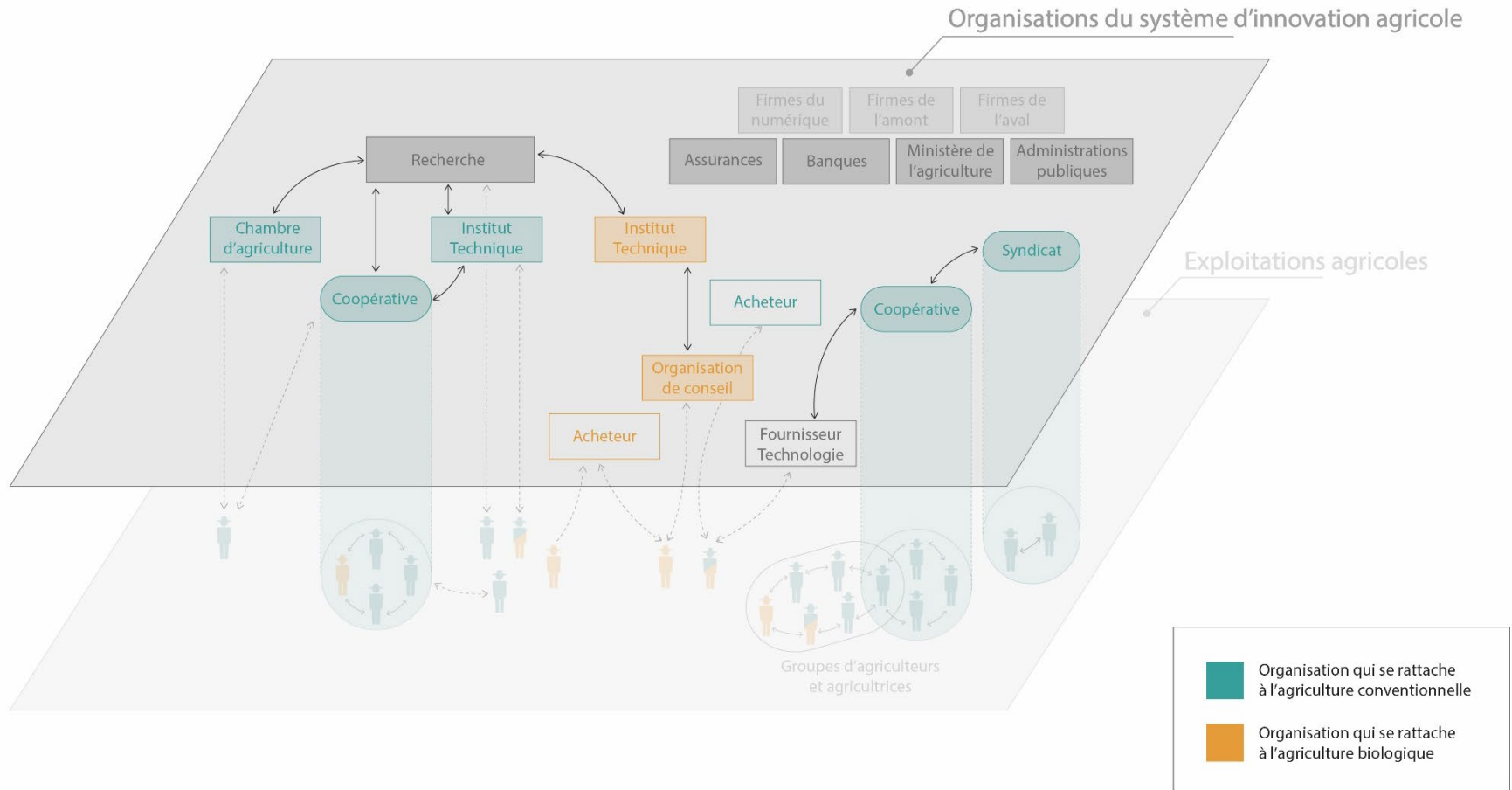
How are digitalisation and ecologisation of agriculture, linked, associated, intertwined, opposed, competing, ... How do these two processes affect (or not) each other?

A multi-level question



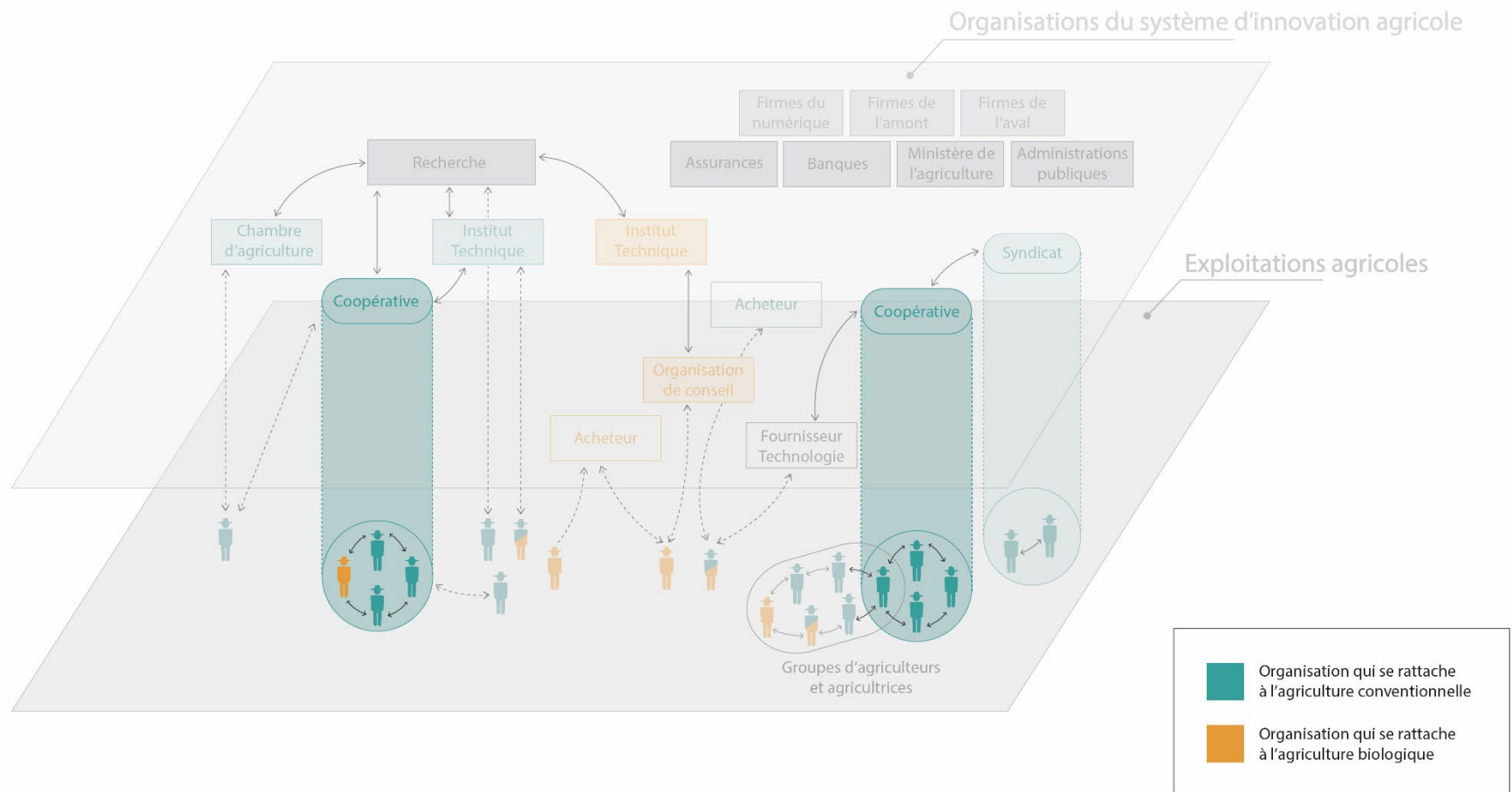
How digital uses associate with agricultural practices ? Are they compatible with all agricultural models at farms level ?

A multi-level question



How digitalisation affects the agricultural sector ? And does it affect differently organisations according to the agricultural model they promote?

A multi-level question



transpose other levels transformations ? How do they articulate digitalisation and ecologisation ?

Representation of cooperatives as intermediates of the meso level

A dual representation

- **An organisation of a sector and a sectorial system of innovation** : Cooperative as an intermediate actors in markets and value-chains ; Intermediate of an innovation system : knowledge and policies intermediate (*Cook et Chaddad 2005 ; Chiffolleau et Touzard, 2014 ; Klerkx et al., 2010*)
- **An interaction system between individual stakeholders** : Coordination of activities : collecting, transformation, commercialisation, (in)formation ; Cooperative governance ; Interactions with a diversity of actors (*Chiffolleau, 2005 ; Touzard et al., 2011 ; Saïssset, 2021*)

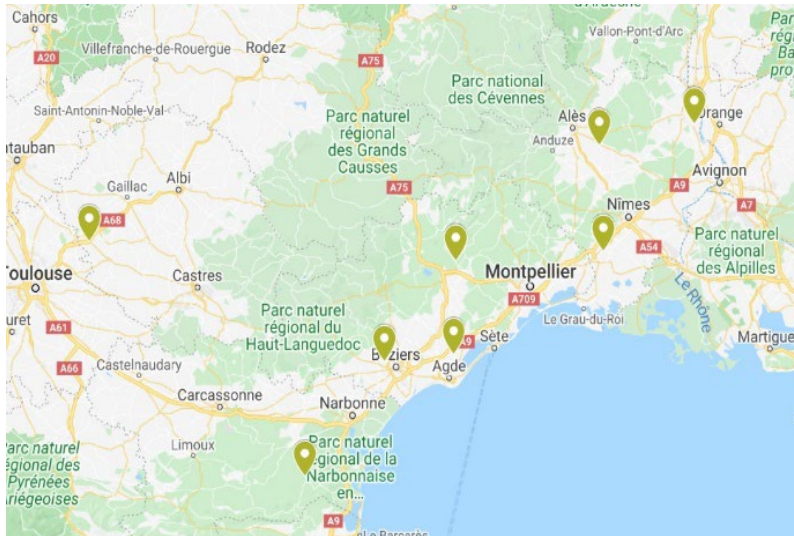
Two approaches to understand flows and dynamics

An institution that imposes top-down constraints (regulation, markets...)

Individuals' interactions that affect the organisation in a bottom-up flow

Cooperatives trajectories

Implementation of this duality



Cooperatives



Wine growers

8 cooperatives covering a range of size / of product (designation of origin) / of location / of environmental engagements

Digitalisation and ecologisation for the cooperatives

- Implementation of environmental certification (organic, Terra Vitis...)
- Tests on environmental or digital practices (soil management...), training, collective groups, collective experimentation (organic practices, digital tools..)
- Implementation of digital tools to manage the production (connected weather station, decision support tools...)
- Digital tools to manage plots and the grape harvest
- Digital tools for traceability



Specific roles of intermediate...

Specific intermediary roles

- Economic intermediaries : respond to downstream requirements (traceability) ; Diffusion role of the technological proposals of upstream organisations ; new partnerships ; new services
- Knowledge intermediaries : support farmers in these transformations, use of new knowledge artefacts ; building their own knowledge
- Regulation and public policies intermediaries : traceability for regulation ; implementation of public projects
- Technological intermediaries : evaluation, investment, information, training, support, state farmers needs and constraints

Specific organisation roles

Building tools to increase knowledge exchange, communication with consumers, to reaffirm a cooperative identity and even to renew governance

Building agroecological projects and consistency within the organisation



Opportunities for transition : support farmers, share risks, experimentation etc.

Specific roles of intermediate... and specific lock-ins

New intermediary roles

- Economic intermediaries : need to assure economic viability with a diversity of partners (upstream, downstream, producers...) ; need to distribute resources
- Knowledge intermediaries : complexification, a growing heterogeneity of needs (depending on agricultural models, of technology...), outsourcing of a part of knowledge exchange (digital network or digital tools)
- Technological intermediaries : an articulation with ecologisation that is difficult to make
« This digital technology does not change practices. It is only a tool. And we haven't developed tools that serve the environmental impact. »

Conclusion

Research topic and field

- The interactions between digitalisation and ecologisation in the agricultural sector
- Institutional Economics : role of organisations and institutions : importance of meso-level !

Why did I incorporate the meso level into my research ?

- A multi-level question that implies a multi-level analysis
- Sectoral dimensions of innovation in agriculture (sectoral institutions, organisations, regulation)
- Specific role of intermediate organisations (focus on cooperatives but also farmers organisations, value-chains stakeholders etc.)

What distinguishes the meso level from micro and macro in my research ?

- A perspective rather than a scale
- A dual representation of cooperatives : both a collective / individual dimensions → a specific method

How does the meso level interact with micro and macro levels in your research ?

- Interactions in all the levels of analysis : intertwining of individual and more global transformations
- Concepts : agricultural models / paradigms / intermediary

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➤ Thank you

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