



AGRICULTURAL KNOWLEDGE: LINKING FARMERS,
ADVISORS AND RESEARCHERS TO BOOST INNOVATION

AGRILINK'S MULTI-LEVEL CONCEPTUAL FRAMEWORK

THEORY PRIMER: 10) HOW FARMERS ASSEMBLE
KNOWLEDGE FOR INNOVATION

Coordinated by **The James Hutton Institute**

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AgriLink

Agricultural Knowledge: Linking farmers, advisors and researchers to boost innovation.

AgriLink’s multi-level conceptual framework
 Theory primer: 10) How farmers assemble knowledge for innovation

The elaboration of this Conceptual Framework has been coordinated by **The James Hutton Institute**, leader of AgriLink’s WP2.

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This document presents the multi-level conceptual framework of the research and innovation project AgriLink. It is a living document.

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It has gone through a transdisciplinary process, with implication of both practitioners and researchers in writing, editing or reviewing the manuscript. This participation has been organised within AgriLink’s consortium and beyond, with the involvement of members of the International Advisory Board of the project, including members of the Working Group on Agricultural Knowledge and Innovation System of the Standing Committee on Agricultural Research of the European Commission.





Theory Primers

The purpose of the primers is to provide AgriLink consortium members with an introduction to each topic, which outlines the key points and identifies options for further reading. The primers have also served to demonstrate the wide range of expertise in the consortium, and to highlight the specific research interests of consortium members. Primers are intended to act as a **foundation for academic journal articles, and an early opportunity for collaboration between consortium members.**

10) How farmers assemble knowledge for innovation

Authors: Lee-Ann Sutherland, Catherine Laurent, Marianne Cerf

1.0 General Overview of the Theory or Approach

1.1 Summary of the Theory, Approach or Topic

This approach looks at assemblages: heterogeneous collections of elements (material and immaterial, sentient and non-sentient) that are constantly evolving. It was developed in part to counter systems thinking (i.e. the assemblage approach argues that many things can be considered systems, could be more usefully considered assemblages, because the term 'system' implies that everything in the system is - or should be - working together towards a common purpose). Assemblage theory emphasises that the different elements have different functions and purposes, and as a result, configurations are constantly changing. Assemblage theory also focuses on how assemblies came into being, to better understand how they are currently functioning and evolving.

1.2 Major authors and their disciplines

Assemblage theory brings together ideas from Gilles Deleuze (a French philosopher) and Felix Guattari (French psychotherapist and philosopher) with more recent thinking about actor networks (e.g. actor-network theory) and the role of material objects in shaping action. The approach has been developed and applied by a range of academics in recent years, particularly in human geography but also in sociology. A review of the literature demonstrated that assemblage concepts are also appearing in archaeology literature and medicine. There are therefore a variety of theorisations and applications of assemblage thinking. In this primer, we focus on the approach of Manuel De Landa (a social theorist not allied with a particular discipline), who draws on Deleuze but also connects to work by French sociologist Pierre Bourdieu.

1.3 Key references

Anderson, B., McFarlane, C., 2011. Assemblage and geography. *Area* 43, 124-127.

DeLanda, M., 2006. *A new philosophy of society. Assemblage theory and social complexity.* Continuum books, London, UK.

Woods, M., 2016. Globalization, China and the New Zealand Dairy Assemblage, pp. plenary paper presented to the International Farming Systems Association (IFSA) Symposium, Harper Adams University, July 2016 (available on-line – provides a useful overview of the theory and application within the agriculture sector)

1.4 Brief history of how the theory has developed and been applied



Assemblage theory is rooted in post-Actor-Network approaches, emphasising the diverse elements (human, non-human, organic, technical, natural) constituting the social (Anderson and McFarlane, 2011). The appeal of ‘assemblage’ thinking is that it identifies entities as heterogeneous and evolving, embodying the ongoing coexistence of diverse power arrangements (Allen, 2011). As such, it also emphasises the contextual specificity and history of change processes and ongoing ‘territorialisation’ and ‘de-territorialisation’ processes: components of the assemblage (e.g. land, particular practices) can be added to or removed from the ‘territory’ or definition of the assemblage through establishment of rules and routines (DeLanda, 2006). Critically, these components can be assembled into new or different assemblages (e.g. evident in the integration of farming practices into tourist experiences).

Assemblage have been used to look at new land configurations in the global South (sometimes termed ‘land grabbing’ – for examples of assemblage theory application Le Billon and Sommerville, 2017; Sassen, 2013). Assemblage theory has had some application to agriculture in the global North, but offers considerable potential (Woods, 2016). Some work has been done looking at the evolution of land use and commodity production in New Zealand (e.g. Woods, 2016; Le Heron et al, 2013).

Conceptualising farms and farming systems as assemblages emphasises the ongoing processes of territorialisation and identity formation, involving human and non-human actants and engagement in multiple ‘fields’. Crucially, assemblage theory draws attention to the materiality of these transition processes. Assemblage theory reflects the material and post-human turns in social research and the call for more complex understanding of the messy interplay of things and ideas or body and mind.

To date, assemblage theory has not been used to consider AKIS.

1.5 Basic concepts

Delanda terms his approach ‘neo-assemblage theory’, and uses some complicated terminology. He identifies the basic principles as:

- The whole is not reduceable to the sum of its parts or ‘elements’ (i.e. the parts have functions beyond that of the ‘whole’ being considered)
- Those elements (e.g. people, objects, natural resources) are heterogeneous
- Those elements can play material and/or expressive roles (a material role is physical – e.g. resource availability and functions; expressive roles are communicative e.g. expressing identity or expectations)
- The properties of the assemblage emerge from the interactions between the elements (not the characteristics of the parts)
- ‘Relations of exteriority’ – a component part of an assemblage can be detached and plugged into a different assemblage. Elements can be in more than one assemblage at a time.
- Territorialisation – the process of stabilising the identity of the assemblage by increasing internal homogeneity or sharpness of boundaries (e.g. defining what is in the assemblage)
- Deterritorialisation - destabilizing and working to change or transform the assemblage (changing what is in an assemblage, what it does, or making use of different capabilities)
- Coding - consolidates the effects of territorialisation and further stabilizes the identity of an assemblage = ‘doubly articulated’ (e.g. through establishing formal rules about membership, purpose). ‘De-coding’ is thus the weakening of these rules and norms.



- Space of possibilities – assemblages have access to the capacity of their elements, even those capacities which are presently within not in use in the assemblage.

History is also important in assemblage theory – assemblages do not emerge out of nothing but from preceding assemblages and their actions. To understand an assemblage, you need to understand how it came together (rather than looking at the properties of its current elements).

2.0 Application to the analysing the role of farm advisory services in innovation

2.1 Relevance to AgriLink Objectives

[tick relevant]	AgriLink Objectives
X	Develop a theoretical framework utilising a multi-level perspective to integrate sociological and economic theories with inputs from psychology and learning studies; and assess the functions played by advisory organisations in innovation dynamics at multiple levels (micro-, meso-, macro-levels) [WP1];
X	Assess the diversity of farmers' use of knowledge and services from both formal and informal sources (micro-AKIS), and how they translate this into changes on their own farms [WP2];
	Develop and utilise cutting edge research methods to assess new advisory service models and their innovation potential [WP2];
	Identify thoroughly the roles of the R-FAS (regional FAS) in innovation development, evaluation, adoption and dissemination in various EU rural and agricultural contexts [WP2];
	Test how various forms of (national and regional) governance and funding schemes of farm advice i) support (or not) farmers' micro-AKIS, ii) sustain the relation between research, advice, farmers and facilitate knowledge assemblage iii) enable evaluation of the (positive and negative) effects of innovation for sustainable development of agriculture [WP4];
	Assess the effectiveness of formal support to agricultural advisory organisations forming the R-FAS by combining quantitative and qualitative methods, with a focus on the EU-FAS policy instrument (the first and second version of the regulation) and by relating them to other findings of AgriLink. [WP4].
	At the applied level, the objectives of AgriLink are to:
X	Develop recommendations to enhance farm advisory systems from a multi-level perspective, from the viewpoint of farmers' access to knowledge and services (micro-AKIS) up to the question of governance, also recommending supports to encourage advisors to utilise specific tools, methods to better link science and practice, encourage life-long learning and interactivity between advisors [WP5];
	Build socio-technical transition scenarios for improving the performance of advisory systems and achieving more sustainable systems - through interactive sessions with policy makers and advisory organisations; explore the practical relevance of AgriLink's recommendations in this process [WP5];



	Test and validate innovative advisory tools and services to better connect research and practice [WP3];
	Develop new learning and interaction methods for fruitful exchanges between farmers, researchers and advisors, with a focus on advisors' needs for new skills and new roles [WP3];
	Guarantee the quality of practitioners' involvement throughout the project to support the identification of best fit practices for various types of farm advisory services (use of new technologies, methods, tools) in different European contexts, and for the governance of their public supports [WP6].

2.2 How this can be applied/developed in AgriLink

The use of assemblage theory to better understand agricultural knowledge and innovation is an important contribution that AgriLink can make to advance thinking on farmer innovation and knowledge exchange.

Assemblage theory should enable us to go beyond the 'systems' thinking of 'agricultural knowledge systems', to consider new actors, and the role of technologies (particularly digital) in mediating knowledge flows. The term 'agricultural knowledge and innovation system' (AKIS) implies that there is a defined system of actors who produce and communicate knowledge to farmers. It also implies that these actors are component parts of the system i.e. that their roles are solely within the AKIS. This is clearly not the case – actors within AKIS are also parts of other systems or assemblages, which place demands on their time and resources.

In AgriLink, we want to look at new actors (e.g. accounting firms, input suppliers) and their role in microAKIS – assemblage theory enables us to include these other actors. It also focuses on the processes – how these firms have come to be involved the microAKIS, as well as the resources they are able to mobilise to do so. Assemblage should be particularly helpful for looking at the role of digital technologies in mobilising microAKIS – access to the internet and mobile phones, for example, reduces the geographic distance between information providers and farmers. Assemblage can also help us look at the R-FAS, and critically examine the extent to which it is a 'system'.

2.3 Research questions relevant to AgriLink [see the draft conceptual framework for further options]

General assemblage questions

- a) what components play a material role in microAKIS?
- b) what components play an expressive role in microAKIS?
- c) what are the territorialisation processes of the R-FAS?
- d) what are the deterritorialisation processes influencing the R-FAS?
- e) What are the coding processes of the R-FAS? What are the decoding processes of the R-FAS
- g) what other assemblages are the components of the microAKIS active in?
- h) what historical processes have led to the farmer's microAKIS, the R-FAS, and how the intersect?
- i) what is the space of possibilities for R-FAS and micro AKIS components?
- k) what other assemblages are linked?



2.4 Methodological implications

Assemblage theory does not have established methods, but published papers rely on document review and qualitative interviews.

2.5 Strengths and weaknesses/Sensitivities regarding use

Assemblage theory is good for understanding the complexity of entities, and going beyond systems thinking. It usefully integrates the role of material objects in enabling and constraining particular trajectories, and draws attention to the historical basis for current configurations. However, the concepts are subjective (difficult to operationalise), which can make for analysis which is descriptive rather than analytical. Power relations are not well conceptualised. See Allen (2011) for further critique.

2.6 Potential operational problems

The complexity of the terms may make it difficult to use in a multi-actor project like AgriLink. Including material objects and history in the dataset may make the data collection quite extensive.

Optional Section 3: Practical example

Mike Wood's (2016) plenary paper provides a good example of the evolution of the New Zealand dairy system and how it adapted to integrate into Chinese markets.

Optional Section 4: Recommended further reading

References (to documents referenced in this template only)

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