



RESEARCH
PROGRAMON
Dryland Systems

*Food security and better livelihoods
for rural dryland communities*

Human agent's typology and its role

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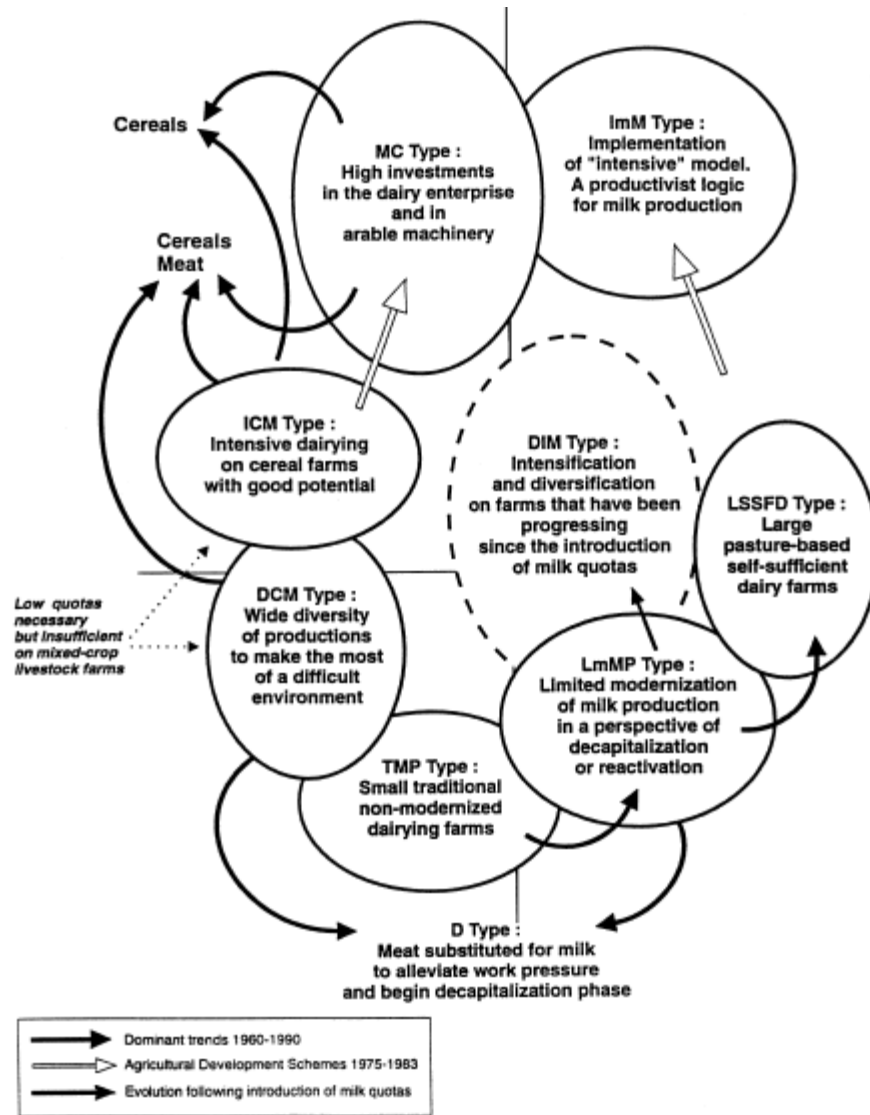
Cairo, 13-21 September, 2015

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Why is typology a matter?

- **Generalization of case-specific findings** (scaling-out and/or -up): Providing a context for application of knowledge/findings in general
 - Medical tests in mice will be applied to who? Why?
- **Relevant sampling**: Providing a context for relevant, cost-effective sampling
 - How to have a minimal sample size to represent best the study population?
- Better **targeting** in policy and management
- **Functional typology** of a human system **reflects** its **context, goal/preference, structure**, hence frames its behavior.
- **Understand and/or model systems transitions**: Change in types (qualitative change)

Example: farm types and transitions



Graphic representation of a dairy farm typology for the Haute-Marne Department, 1987 (Source: Perrot, 1991).

Source: Landais (1998)

Type and typology

- A **type** is an abstract generic model which define the characteristic features of a series of objects.
- The term '**typology**' designates both:
 - **The science of type elaboration**, designed to help analyze a complex reality and order objects which, and
 - **The system of types** resulting from this procedure
- E.g. Plant taxonomy is kind of typology

Functional typology

- To be meaningful, systems of different types must be **functional**, **i.e. responsive differently**, to environmental/contextual change regarding the defined objectives
- E.g. Different plant species respond differently to pollution and drought.
- E.g. Labor-rich and labor-less households adopt differently an introduced waste recycling technology.

Methodology for defining agent's typology

- **Guiding aspect:** Purposed system performances the typology will meant to understand
- **Science/theory background** for the typology formulation
 - Biological systems: biological species and/or other taxon
 - Smallholder livelihood: Sustainable Livelihood Framework as a theoretical option, or other SES frameworks
- **Procedures/methods for deriving concrete agent types** given specific case with data

Methods for deriving agent's types

- Expert opinions
- Participatory rankings
 - E.g. Participatory well-ranking
- Step-by-step/step-wise analysis
- Parametric multivariate statistics
 - Principal component analysis + cluster analysis

Methods to define agent's types

Method	Advantage	Disadvantage
Expert opinions	<ul style="list-style-type: none">• Fast, cost-effective	<ul style="list-style-type: none">• Risk of bias
Participatory rankings	<ul style="list-style-type: none">• Fast, cost-effective• Participatory potential	<ul style="list-style-type: none">• Difficult to include multi-criteria• Difficult to model type change
Step-wise/decision-tree classification	<ul style="list-style-type: none">• Combine qualitative and quantitative criteria• Work with small sample size• Participatory potential• Easy to implement in simulation	<ul style="list-style-type: none">• Difficult to know 'key' discriminates among many criteria• May be low contextual robustness
Parametric multivariate statistics	<ul style="list-style-type: none">• Capture key discriminates• Easy to implement in simulation	<ul style="list-style-type: none">• Less capable to capture many qualitative criteria• Not work well with small sample size

Source: Le et al. (in prep.); Le & Feitosa (2012)