

SCALE Social Scientists Meeting Notes: February 20, 2002
NREL, Colorado State University

Goal of Meeting:

Social science component of SCALE – what we are going to do? Establish framework of what we can do and how.

Critical questions to address:

- Why is there a trend toward fragmentation of total systems?
- What are the effects of this fragmentation on social systems? (Fig. 1)
- How does land tenure contribute to fragmentation?

Points social science group should address/explore:

- Capture generalities of complexity and fragmentation at sites – explore similarities and differences
- Causes of fragmentation in the temporal scale (agricultural period, industrial era, etc.) will be important to explore.
- Include levels of organization in analyses. This will vary by site.
- Fragmentation of livestock systems seems inevitable, fragmentation is not always viewed as a cost – we will argue that it is
- Flexibility in systems will need to be addressed – land use may change more rapidly than land tenure systems
- Both externalities and internalities may drive fragmentation and enclosures

General Notes:

Causes of Fragmentation and Consolidation (political, economic, social) (Fig. 2, Fig. 3)

- Need a framework to look at causes
- Economic pressures (nationally/internationally) influence fragmentation (costs of inputs/outputs)
- Changing commercial systems may also cause it
- Fragmentation – physical property (not legal/tenure system term)
 - Legal drivers – individual land rights (enclosures)
 - What drives enclosures/privatization?

Example: Africa

- Economics: subsistence-oriented
- State-less (indigenous) – reflects local conditions
- Legal systems – oral (fluid) – tenure systems reflect conditions

Example: Roy Behnke's figure of water points in Libya (Fig. 4)

Difference between land tenure and land use (could use an example like differences during drought)

- Land tenure includes laws, customary law, etc., and this doesn't always cause fragmentation (although a change in fragmentation may cause a change in land use).

There are many mechanisms for fragmentation.

- Example from Asia by Jim Reardon-Anderson:
 - History is important to consider. Manchu and Mongol alliances (purely political/power-oriented change – mid 1600s). 18th century population explosion in China (population pressure driver to fragment land).
- Example from Carol Kerven:
 - Similar story in Russia (and –stan countries). Imperialism allows population increases. This is opposite of the Australian case, where inland populations decreased after English domination.

* Idea for book chapter – development of land tenure systems (historical analyses) – see following discussion

Exercise for 1st workshop (summer 2003) – diagram of sites

- axes: temporal (contemporary/historical), spatial (site/global)
- include variables we want

Historical framework (500yrs) ← interactions → contemporary dynamics
political site-level analyses
context for way people act today
discipline historians to get information needed

Boundaries (temporal, social, habitat) need to be established.

Method: focus on site level analyses (output to include historical analyses), extrapolate to the future

Question: do varying histories produce similar outcomes?

Look at commonalities among sites as going up a tree – Philip Thornton (Fig. 5)

Spatial scale varies with historical, political, and land tenure frameworks – all contribute to contemporary dynamics

Goal: systematic integration of drivers and change factors (Fig. 6)

- Technical factors
- Commercial value
- Political/legal considerations
- Population
- Climate
 - Decision-makers weigh above factors (costs/benefits of land use exclusivity)

Cultural aspirations may influence scale through economic strategy – the influence is not always direct. Culture may affect land use, which affects scale.

ultimate causes (drivers) → exclusivity → scale

Fragmentation includes scale of land use and exclusivity of land use.

Political effects of fragmentation

- Household level (good place to start) – how to aggregate?
- Effects
- Measurements

Constraints to ecological optimum level will be felt at all levels (household and up).

Causes of fragmentation at different scales will affect different levels of household organization.

Impacts of fragmentation need to be studied at different levels of social organization.

Impacts on whom: household, community, political unit

Measures of Effects of Fragmentation

- Value of different land uses
 - Trade-offs
 - Diversification and intensification can be an outcome of fragmentation – stability/resilience
 - Performance over time

Key point: Assess net costs/benefits of fragmentation. Need to include agrarian and other areas to be valid (in addition to grazing lands). May need to leverage more money from other projects to include everything.

Modeling exercises: It is better to create a new simple model for different areas than to force a fit.

Conceptual diagram for social science aspect of SCALE (this diagram is just a starting point) (Fig. 7)