



Communication tools in livestock system analysis

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Livestock system analysis

- Content: To identify and describe components of livestock system and understand their relationships
- Aim: To detect areas in which the efficiency of the system can be improved

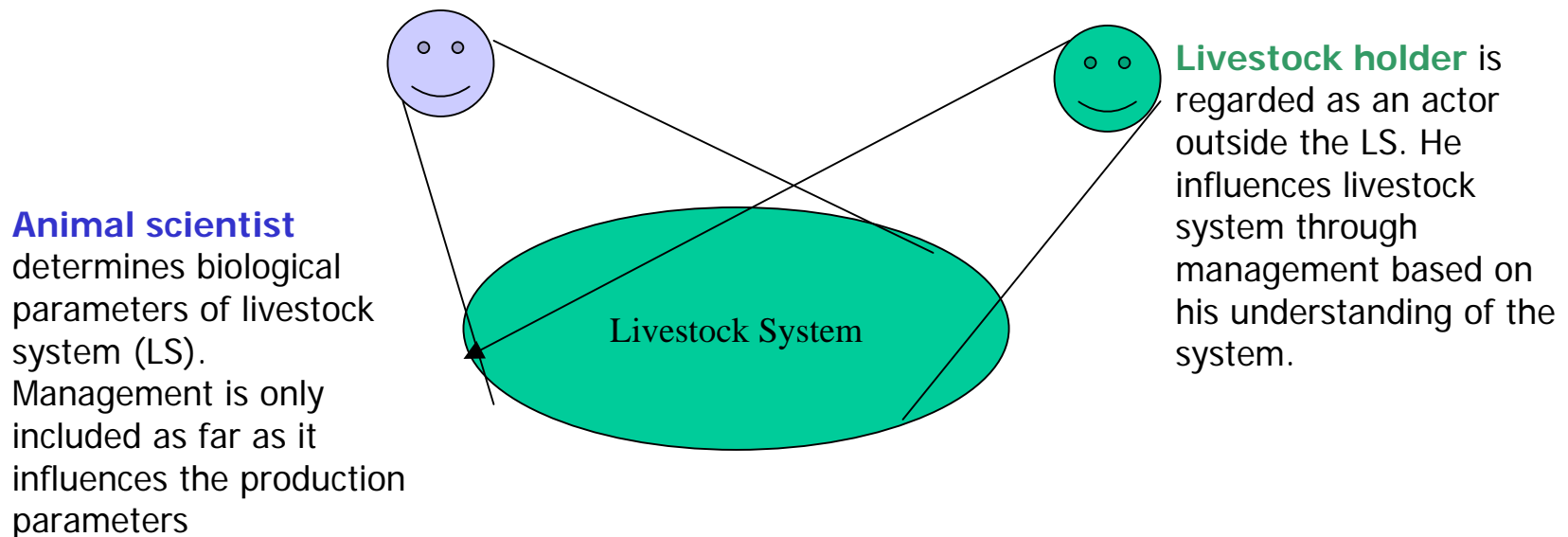
Resource poor livestock system

- The strategy of increasing output through higher input is mostly not applicable
- Stabilising and increase of output through optimising output/input relation (efficiency of resource use)
- Need to get a picture on temporal and spatial availability, accessibility and utilisation of different resources

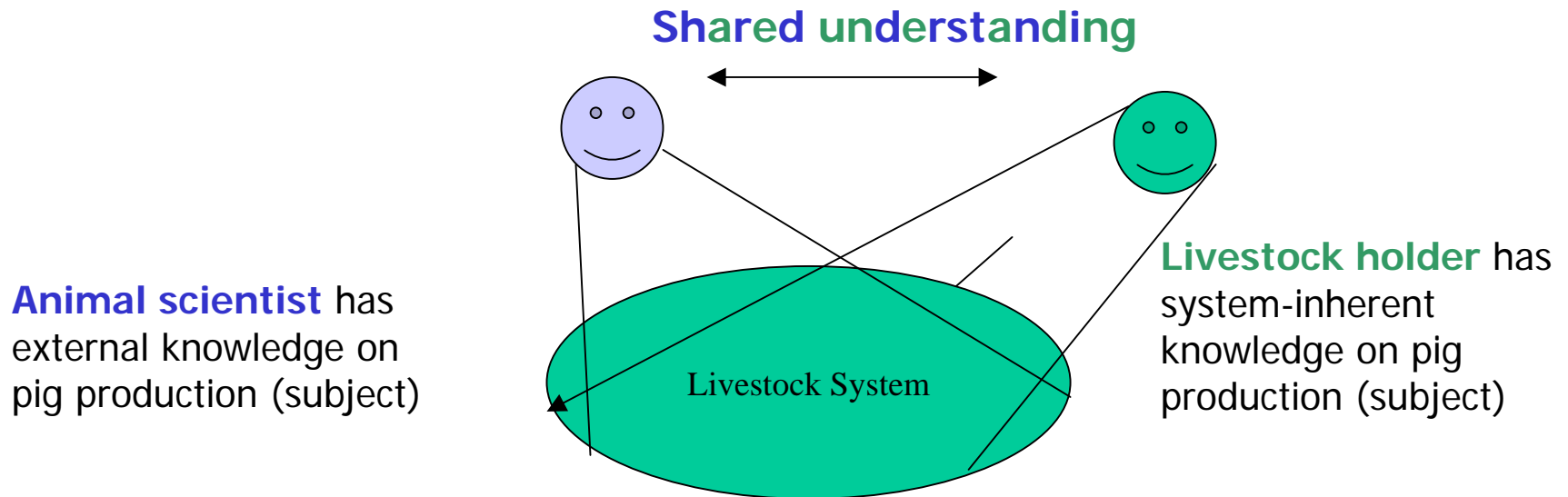


Animal Scientists' Approach

- Develops a model of livestock system in order to understand it
- Model includes parameters that are known to the scientist to influence the systems output



Communication between animal scientists and livestock farmer



- Idea is to develop a common (shared) understanding (despite different ontology, epistemology, perception, perspectives, importance, communication rules)
⇒ multi-stakeholder communication

Include views of three stakeholders in the research process

- Animal Scientists, both German and Vietnamese, and livestock farmers have their own view and understanding of the system
- The differences provide an opportunity for joint learning and sharing of knowledge
- Question: is there a possibility for better description of the system through **enhanced communication among the three stakeholders?**



Methods for collection of information

- **Standardised Questionnaires: Question–Answer communication** are commonly used to collect information on the production system which is not directly measurable
 - Questions are biased by scientist's pre-assumptions on the subject (you can only ask what you think of)
 - Wording questions depends on the insight of scientists into the subject...
 - and on their special knowledge interest (i.e. their focus on the subject, their observer's angle – determined through their discipline)

Good questionnaire requires comprehensive knowledge on the system. Then it provides comparable data about specific aspects, which have been identified as relevant

- **Informal questionnaires: open communication**
 - no systematic insight into relevant factors for research topic

Communication tools

- The applied communication tools allow a **temporal and/or spatial structuring** of information
- **Visualise contents** in form of maps or diagrams improve the ability of the speaker to express his knowledge and the ability of the listener to understand: this provides a better ground for dialogue
- Maps and diagrams serve as **open protocols**

Examples: use of village map and seasonal calendar in livestock system analysis

Tool: Village resource map

Topic: Pig breeding

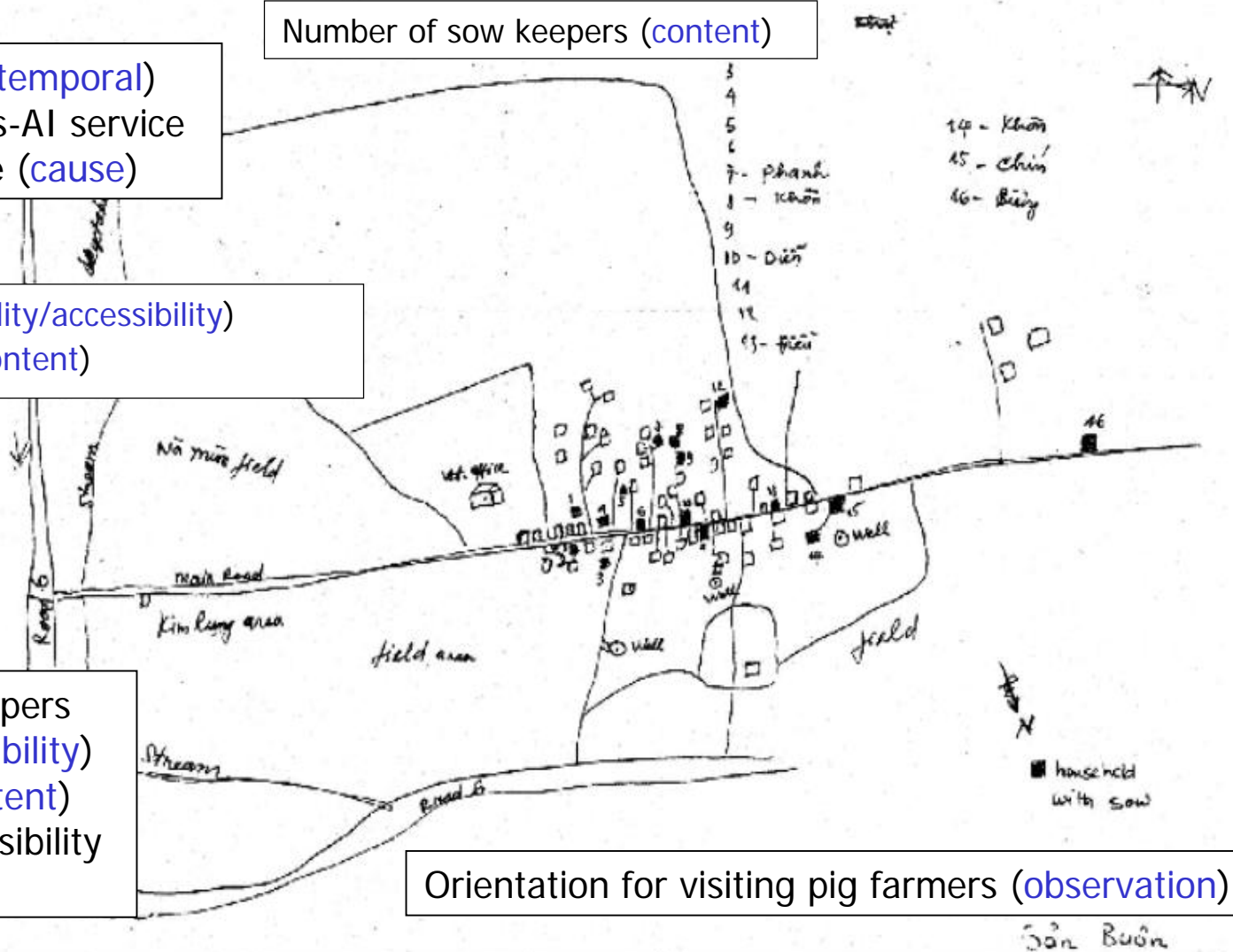
Number of sow keepers ([content](#))

History of pig breeding ([temporal](#))
Inbreeding - exotic boars-AI service
Transmittance of disease ([cause](#))

Veterinarian ([availability/accessibility](#))
Cost of AI Service ([content](#))

Location of boar keepers ([availability/accessibility](#))
Quality of boar ([content](#))
Importance of accessibility ([explanation](#))

Orientation for visiting pig farmers ([observation](#))



Tool: Seasonal calendar



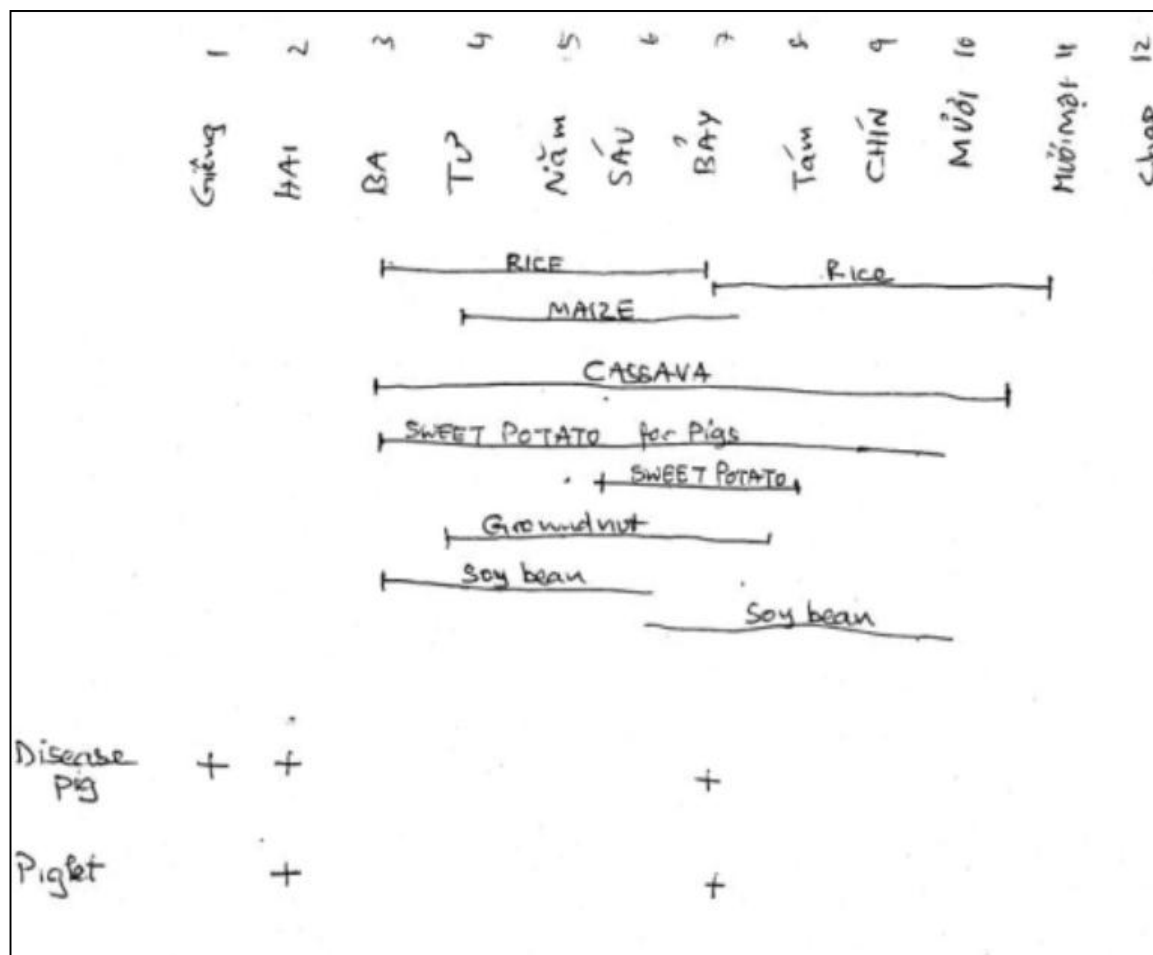
Exploration of seasonal diagram

Topic: Seasonal aspects of pig husbandry

- Purchase and selling/slaughtering
- Prices
- Occurrence of diseases

Topic: Pig feeding

- Feed availability
- Feeding strategy
- Actual feeding ratio
- Responsibility



Validity of communication tools' results

Validity refers to the closeness of a finding to the reality

- Clear maps and structured diagrams and interactions in a group of people secure that the topic is critically examined and reviewed
 - Possibility for cross-checking
 - among participants
 - between verbal and visual information
 - for completeness (it is unlikely that aspects are forgotten/neglected)
 - logical, internal consistency (internal verification by cross-checking, spatial, temporal and causal relations)
 - Common (shared) conclusions:
Interpretation of the results is done jointly with farmers
- ⇒ Interpersonal consensus on situational meaning and plausibility among participants and between participants and scientists

Research steps

Step 1

- Focus in our application was at first on listening to farmers views and learning about their system understanding
 - Scientists analyse findings and position their system relevant knowledge
- ⇒ Preparation of a meaningful conversation among subject-matter specialists (farmers, Vietnamese scientists, Hohenheim scientists)

Step 2

- Feed-back to farmers on production matter- scientists position challenges their assumptions about the system – stimulates feedback to scientists

Step 3

- Based on attained system understanding animal science methodologies to identify improvement possibilities can be employed
- Feed-back of improvement possibilities to farmers -scientists position challenges farmers assumptions about the system – stimulates feedback to scientists on improvement measure

Hermeneutic cycle

- System understanding is refined through continuous and mutual exchange and reflection among different stakeholders
- Scientists do not only learn about farmers views, but through the confrontation with the view of an alien, the own cognitive structure (way of constructing a system) becomes obvious and can be critically reflected

The double sided process of understanding in a dialogue

- Interactions with stakeholders of other (alien) knowledge system deepens our self-understanding (how we construct a system, our hypothesis etc.) and improves our understanding of the knowledge structures of the others.
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Conclusions: Contribution of communication tools to livestock system analysis

- The map or diagram provide a communicative platform to explore aspects of the production system in following ways: spatially (availability and accessibility), b) temporally (e.g. development over time), c) by content (e.g. details on quality and quantity) d) explanatory (e.g. causes, relationships).
 - Pre-assumed hypotheses refined, unconscious hypothesis comes to surface, new hypothesis emerge
 - Farmers' and scientists' system understanding will be improved
 - Derivation of improvement possibilities can be conducted based on a deeper understanding of the system
- ⇒ Communication tools and animal science specific methodologies complement each other in the livestock system analysis

Outlook

- Respective interdisciplinary should be institutionalised for a systematic incorporation of communication tools
 - in livestock systems research
 - and in subject matter specific education
- The systematic use of a multi-stakeholder systems analysis methodology helps to obtain a meaningful picture of the livestock system and improvement possibilities, i.e. the resources potentially available to the livestock farmers and on possible ways for their efficient use.