Building shared knowledge at the frontier between pastoral and environmental management

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Abstract: *In less-favoured rural areas in Europe, the implementation of agri-environmental policies has encouraged land managers to reconcile pastoral stakes (producing feeding resources for livestock) and environmental ones (preserving biodiversity) in "concerted approaches". Previous works have shown that the effectiveness of such concerted approaches depends on cognitive synchronisation processes between the various stakeholders involved, and thus their collective ability to share knowledge. We present here an interdisciplinary research project (combining cognitive management science and ecology) to investigate the combination of heterogeneous knowledge from two different fields (agriculture and environment, respectively). By observing and participating in various land-use management projects, especially in the Pyrenean pastoral areas, we will analyze how shared knowledge (especially to produce operationnal indicators on vegetation) is issued from formalising and combining different knowledge sources (know-how and knowing, formal and informal, empirical and scientific, etc.). As a first step, we built a typology to specify different knowledge-sharing situations.*

Keywords: *livestock, environmental issues, pastoral areas, shared knowledge, management indicators*

Introduction

In less-favoured rural areas in Europe, the general agricultural decline is largely responsible for the abandonment of farmlands and its subsequent natural vegetation dynamics such as encroachment by shrubs and trees. This dynamics raises environmental stakes for both the conservation and development of natural heritage and the prevention of natural risks (Swift et al., 2004). Since 1992, the implementation of agri-environmental and environmental policies has encouraged land managers and conservationists to no longer consider farming practices as perturbations, but instead as means to monitor these ecological systems. Moreover, in pastoral areas, grazing practices are very often the only way to manage these plant dynamics. There is thus a growing concern to reconcile pastoral management, and especially grazing practices, and the environmental management of these areas.

An increasing diversity of stakeholders (that is, agricultural advisors specialised in pastoral issues, the farmers who use these rangelands, naturalists, environmental land managers...) come together to design and implement land-use projects. In particular, crossing pastoral stakes (opening up closed rangelands and producing feeding resources for livestock) and environmental stakes (preserving biodiversity) implies strong interactions between pastoralists and environmental managers.

Scientific problem

But gathering together stakeholders does not guarantee an effective concerted approach without any conflict. Such difficulties have indeed often been studied from the point of view of power relations, negotiations and compromises between participants with different or even diverging interests. Organizational innovations and changes (Couix, 2002; Röling, 1994) or "*intermediary concepts*" (Teulier and Hubert, 2004) facilitating concerted approaches remain largely unexplored.

The efficiency of these working groups really depends on their learning capabilities (Cerf et al., 2002) in order to learn how to work together (Couix and Girard, 2005). In other situations, it has been proved that the efficiency of collective work greatly depends on the group's capacity to initiate "*cognitive synchronisation processes*" (Darses and Falzon, 1996), making it possible to build shared knowledge, or « *common cognitive framing* » allowing stakeholders to engage cooperation on the basis of a common definition of the situation (Raulet-Croset, 1998).

In the case of land-use projects, there is a high heterogeneity of knowledge to be used. Pastoralists and land managers draw on their knowledge from two different fields (agriculture and environment, respectively) and that is produced in various contexts: expert reports, results of experiments, models, and their own knowledge resulting from their personal experiences as well. This knowledge is then of various different types (know-how and knowing, formal and informal, empirical and scientific, etc.). Some of it may be "actionable" (Argyris, 1995), that is "*produced with actionability in mind*" and can thus "*be experimentally developed and put into action by practitioners*", whereas scientific knowledge generally shows genericity and stability characteristics. It also concerns various objects (rangelands, habitats, rare species, regulations, etc.). Moreover, scientific knowledge that is used is from fields that are still disconnected in terms of research (biotechnical sciences, phytosociology and ecological sciences), even if they deal with the same object: plant cover.

Many research works in the rural or agricultural domain have proposed methods to combine the many and various viewpoints of stakeholders. Nevertheless, a consensus may be grounded on a superficial mutual understanding and these methods do not bypass differences of interpretation between individuals. On the contrary, aiming at building only shared knowledge between all stakeholders is clearly a dead end since a "*common cognitive framing*" can begin with a simple "non-incompatibility" of each other's definitions (Raulet-Croset, 1998). In our agri-environmental situations, we then assume that this necessary cognitive synchronisation may involve various degrees and modes of knowledge-sharing, ranging from a general consensus to a compatibility of each one's knowledge.

Hypotheses and interdisciplinary research questions

This poster presents an ongoing interdisciplinary research project (combining cognitive management science and ecology), which aims at investigating the combination of heterogeneous knowledge within concerted land-use management of natural habitats in pastoral areas. We assume that formalising stakeholders' viewpoints may facilitate the building of knowledge that is both shared and "actionable" by stakeholders involved in the project. We will adopt a "knowledge engineering" approach, consisting in eliciting, formalising and combining different knowledge sources. Our research questions are:

- What is the knowledge (theoretical or technical references) and knowing used to diagnose the actual and expected vegetation state response to pastoral and environmental objectives?
- How can we build shared knowledge, especially shared indicators related to an agroecological diagnosis aimed at plant cover management? What is the combination (Girard and Navarrete, 2005) of scientific knowledge and empirical knowing in the building of this shared knowledge?

Methodological approach

These questions will be investigated by observing and participating in various land-use management projects, especially in the Pyrenean pastoral areas. Interactions between pastoralists and environment managers will be studied both during the design and the implementation of these projects. In order to choose our case studies, we are building a typology of knowledge-sharing situations within land-use management projects showing a diversity regarding:

- The individual commitments and the role of the administrative or regulatory tools (from a European directive application (Natura 2000), state incentives (Local Agri-Environmental Operation, Territorial Forestry Charter) and local efforts such as local agreements between communes and landowners);
- The education and experience of stakeholders and the existence of mediators integrating environmental and pastoral knowledge-bases;

All selected projects will consider jointly pastoral and environmental activities within a *same* territory, in which the management of complex natural vegetations (permanent grasslands, rangelands…) is at stake both for providing feed resources for livestock and for biodiversity conservation.

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