

# Solutions for the environment – but what are the problems? An exploration of approaches to deal with issues of the environment

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## Abstract

The shift within agriculture from a principal focus on productivity towards sustainable development has created a more diverse and complex context in which extension projects operate. Systems approaches to extension claim to be able to address these complexities. However, this paper will argue that the cognitive focus that characterises much of systems thinking is based on a fundamental misunderstanding about the link between knowledge and action. It will argue that as knowledge emerges from action, a much greater emphasis on action and practice as pathways to change is required. The paper will discuss this with reference to the Victorian Department of Natural Resources and Environment (DNRE)'s Developing Social Capability (DSC) project.

## Key words

Extension, systems thinking, social capability, practice change, innovation and change.

## Introduction

The shift within agriculture from a principal focus on productivity towards sustainable development has created a more diverse and complex context in which extension projects operate (1). In this context there is a place for the science-based transfer of technology approach to dealing with environmental problems that involves working primarily with the farming community. However, extension researchers have recognised that this approach by itself is unable to deal with the complexities of the current context of change. Many therefore advocate a systems approach to extension in order to facilitate constructive exchanges between different stakeholders within natural resource management, including scientists, extension officers, farmers and the broader community. However, this paper will argue that the cognitive focus that characterises much of systems thinking is based on a fundamental misunderstanding about the link between knowledge and action.

In developing solutions for the environment, we will therefore argue that we need to ensure that we understand the nature of the problem in terms of facilitating environmental practice change - hence the title of this paper. We will argue that environmental practice change is not primarily an issue of knowledge and information, but one of action and practice change. This paper will challenge the cognitive view of systems thinking that views knowledge as the primary pathway to change, and discuss a practice perspective with reference to the Victorian Department of Natural Resources and Environment (DNRE)'s Developing Social Capability (DSC) project.

## Rethinking the systems approach to extension: challenging the cognitive perspective

Rational modes of thinking have dominated approaches to change management. Value-free knowledge and science are often considered to provide the impetus for change and progress. This linear conceptualisation of the change process has been challenged. Extension researchers have accordingly questioned the notion of rational and value-free science that underpins the linear transfer of technology model of extension. As natural resource management issues have come to the fore, the social and moral dimensions of development and innovation have been highlighted. In fact, Woodhill *et al.* (2) argue that sustainable development is not primarily about knowledge and science, but about different and competing values, beliefs, perceptions and political positions which cannot be ignored. Consequently, while there is a place for science-based solutions to environmental issues, and a concomitant adoption-focused extension program, this is no longer adequate as a comprehensive strategy to deal with the complexities and multi-faceted issues of sustainable development (1,2).

In response many extension researchers have adopted a systems perspective that critiques the linear approach to extension (eg. 2,3,4). Systems thinkers advocate exchanges between a broad but relevant range of

stakeholders on an issue. They are interested in looking at agricultural systems that encompass all the various actors who interact and connect within it as a whole. According to systems thinkers, it is from this interaction and dialogue between actors who hold different perspectives, values and beliefs, that new understanding and knowledge emerges (4). As such, a systems approach opens up a multiplicity of perspectives, and therefore action plans incorporate a range of different solutions and outcomes (3).

However, while such a systems approach to extension aims to incorporate the views of a much broader range of stakeholders than the transfer of technology model, it has been criticized for retaining a strong emphasis on knowledge as a pathway to change (5). According to Weick (6), knowledge does not precede action, but emerges from it. He argues that sense making is a retrospective process whereby we make sense of lapsed experience by attaching meanings to it that are coherent with our sense of self, and our values and our norms (6). If we accept that knowledge is socially constructed, and that knowledge does not precede action but emerges out of action, a much greater emphasis on action and practice as pathways to change is required (5).

In exploring this further, Paine (5) suggests that practice change and concomitant new knowledge emerges out of the combined activities of different stakeholders in a particular setting. As different stakeholders work together and make sense of their activities together, problem definitions are constantly refined and activities are mobilised accordingly to develop new shared practices. This is referred to as interplay between practices. In other words, practice change occurs as a result of different actors within the system working or acting together, making sense of this action together and aligning their practices. Paine (5) therefore proposes a systems approach that focuses on the activities of actors, and in particular on the interplay between diverse practices.

The following section will explore this further with reference to DNRE's Developing Social Capability (DSC) project.

### **Implementing a systems approach: Developing Social Capability**

The aim of the DSC project is to enhance the capability of people within the agriculture and food sector to generate and respond to change. In taking a systems view, the project design reflects the need to build both organizational and community capability to achieve the project goals. The commissioned report which provided the background for the project, suggested that DNRE's approach to social capability building comprise a pilot project to trial a social capability building methodology, as well as a participatory action research strategy that involves staff in undertaking further primary research to support social capability. The report suggested that this would enhance the institutional capability to facilitate the development of social capability (7). The project therefore comprises two stages. First, a project development phase that involves DNRE staff in a participatory action research process to explore the issue of social capability further and to develop a social capability building methodology. And second, an implementation phase whereby the project team works with extension staff in trialing the methodology in pilot projects.

The project development phase has recently been completed, and the pilots are currently being established. This section will discuss the learnings about social capability that have emerged from the project development phase and discuss how the implementation of a participatory action research methodology contributed to the development of institutional capability.

#### *Learning about social capability*

The starting point for the project development phase was an exploration of the Rapid Appraisal of Agricultural Knowledge Systems (RAAKS) process. The RAAKS process is "... a participatory action-research methodology for studying innovation related problem situations and for designing possible courses of action" (8). In very broad terms the process involves iterative cycles of stakeholder identification, problem definition and action planning. While this process is referred to as a knowledge systems methodology, it is philosophically aligned with the practice perspective as its participatory action research methodology is grounded in activities and practice.

The DSC team started with a process of identifying the various actors within the system, including extension officers, research scientists, catchment management authorities, special interests groups, businesses and financial institutions and farmers. Interviews and focus group discussions with system participants asked them to reflect on their practices and activities. A number of priorities were identified by stakeholders for

improving the capability of people to manage successfully in a changing environment. These included information management, positioning within the value chain, and natural resource management issues. These issues have provided the basis for the selection of pilot projects.

In relation to these issues three aspects of social capability have emerged, including sense making, networking and alignment. It became clear that many land managers do not need more information, but require skills and processes that help them make sense of the information they already have access to. Networking and sharing information were considered to be critical in this process of making sense of information and also in terms of addressing the considerable misalignment of perspectives on the issues and pathways to change that became evident.

These aspects of social capability will be further explored within the pilot projects.

#### *Building institutional capability*

The purpose of the participatory action research strategy was to build institutional capability within DNRE to implement a social capability strategy. Most DSC team members had very little exposure to participative action research processes prior to their involvement in the DSC project. However, they were excited about the opportunity that this project provided them and DNRE in general:

*... to do the research ourselves, to actually go through working out what worked and what didn't work, exploring all the different dimensions ... having the time to do that ... it was fantastic ...*

Team members valued the fact that the process engaged people in defining the problem, and that the process encouraged the team to re-visit and re-define the problems. This is considered important in allowing an organization like DNRE to more effectively target issues:

*... that's really valuable learning in its own right, not just that they've refined their problem, but say hang on, if we'd kept going down this track with our first grab at the problem, we would have missed the mark ...*

Furthermore, the participatory action research process involved the team's close collaboration with social researchers and evaluation staff. As such the project development phase involved facilitators, extension staff, social researchers and evaluators working together. While initially team members used different concepts, tools and processes to make sense of the project and perform their roles, during the course of the project development phase, the interplay between team members mobilised activities towards evaluation and social research, which corresponded with a significant change in the team's practices, skills, knowledge, and attitudes. For some team members this process is a long way down the track, while others feel they are still 'finding their feet'.

On the whole, initial findings of the project development phase suggest that a focus on working together has facilitated significant change in the team's skills, knowledge and practices, and as a result the process holds promise for the pilot phase of the project.

The pilot phase will involve further iterations of the participatory action research cycle with extension projects. It is anticipated that the pilot phase will replicate the project development phase in so far as it will similarly involve DSC team members, extension staff, evaluators and social researchers to work together on issues in a way that aims to change their practices, skills, knowledge and attitudes. However, while the project development phase was primarily concerned with building institutional capability and institutional practice change, the implementation phase will be concerned also with community capability and practice change. It is therefore critically important to place greater emphasis on engaging community stakeholders (including farmers) as active participants in the pilot phase.

#### **Conclusion**

Systems approaches are often characterised by a cognitive focus on knowledge as the primary pathway to change. We have argued that this is based on a fundamental misunderstanding that constructs knowledge as prior to and informing action. Instead, we have argued that practice change and knowledge emerges from

collective action. Therefore, it is important to develop a better appreciation of action and practice as pathways to change. The experience of the DSC project to date demonstrates how a participatory action research methodology facilitates the emergence of practice change as a consequence of different people working together and making sense of their activities together.

Overall, before we develop solutions for the environment, it is important that we understand the nature of the problem that is being addressed. Our argument is that issues of the environment are not about a lack of knowledge or awareness, but are issues of collective action and practice change.

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