

# **Wheelbarrows full of frogs**

*Social learning in rural resource management*

Cees Leeuwis and Rhiannon Pyburn (eds.)

International Research and Reflections

# Cognition, development and governance

## *Some lessons from knowledge systems research and practice*

Paul Engel and Monique Salomon

### **Abstract**

The authors focus on how social actors engage in processes of learning and doing, how they are knowing their way into the future. People are seen as cognitive beings who make sense of their environment. Yet, their environment also directs and pushes their knowing in a particular direction. This assumes a direct link between social knowing and governance. A case from rural Cameroon shows how well-intentioned but isolated attempts to strengthen local learning may backfire. The question is raised as to whether one can speak of good governance of knowing. Three decades of knowledge systems research are reviewed in order to trace its evolution, identifying some of its contributions to the understanding and management of agricultural and rural development, and to natural resource management. Hard systems thinking, taking knowledge as a commodity to be disseminated and utilised, paved the way to success of the Training and Visit System in commercial agriculture. Hard systems failure to deal with diverse complex farming systems moved research from technology to people. The human dimension of innovation was explored further. Different approaches and methodologies were developed for facilitating social inquiry, individual and collective sense making, and joint learning. Röling's platforms couple actors with their environment, tying the knot between knowing systems and natural systems. A case study from South Africa demonstrates how explicit attention for issues of governance when facilitating social knowing for development, may help create adequate conditions for successful social learning and conflict resolution with respect to natural resource management.

## **1 Introduction**

During the last part of the twentieth century, the study of human knowing for development has been brought into the practical domain. Fundamental concerns about the social, economic and environmental impacts of techno-scientific approaches to development, triggered intriguing questions about how societies, communities and organisations may create and/or cope with change and hopefully, benefit from the opportunities emerging in its wake. Such questions triggered a substantial investment in research on how to best manage innovation and change in complex, multi-actor environments, for example in the fields of agricultural and rural development and natural resource management<sup>1</sup>.

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<sup>1</sup> Another was the private sector. For example, Rosabeth Moss Kanter (1989) studied large corporations and demonstrated how "giants learn to dance".

Here we want to review one of the main strands of this effort: knowledge systems thinking<sup>2</sup>. This international research tradition has been a source of inspiration for development thinkers. However, in spite of its richness and vitality, it doesn't seem to have generated widespread impact on the debate of development-related governance issues. This surprises us, as we feel it did indeed generate many insights in this respect. Therefore, throughout the chapter we ask ourselves, what has knowledge systems thinking taught us about the governance of knowing for development?

Let's for the moment take *governance* to refer to governing development processes. Mostly, the authoritatively guiding hand of the government has made way for government, civil society and private business actors, establishing new patterns of socio-political interaction to acquire and maintain influence at local, regional and national levels. Specific issues for engagement may include agenda setting, stakeholder participation, resource management, capacity and institution building and performance assessment. The same may apply to the *governance of knowing for development*. This chapter represents our very first, preliminary attempt to explore this field. It is an invitation as well, to those who know more about it than we field workers do. We hope this paper will trigger further inquiry into this exciting and, as we see it, crucially important field.

## The structure of the chapter

First of all, we explore the domain of inquiry by asking ourselves: *what are we looking at?* We hope this will clarify our focus and relevant boundary issues, particularly with respect to *knowing for development*. Secondly, we will illustrate some of the issues involved in governing or rather, *not governing* learning and innovation, with the help of a case from rural Cameroon. Thirdly, we sketch three decades of systems thinking focused on understanding processes of knowledge, innovation and cognition for development, illustrating various emerging approaches to address governance issues in practice. Fourthly, we present recent case material to illustrate what a focused effort at governing collective learning processes for natural resource management may look like. Finally, we draw out some insights and challenges with respect to governance of multi-actor learning processes, and how these may inform development policy and practice.

## 2 What are we looking at?

We focus primarily on social processes of *knowing*. Knowing emphasises the dynamic unity of learning and doing, instead of knowledge as statements about the world and rules and recipes for acting in it. In fact, a set of actors involved in *knowing* their way

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into a particular future, we may best refer to as a *knowing system*, as the more general term. The concepts *knowledge system* and *cognitive system* we will reserve for later, when we focus on particular scientific initiatives. Further, in order to bring into focus governance and, why not, management aspects, we pay particular attention to *ways in which social actors engage in social processes of knowing effectively*. Indeed our focus is on (collective) human cognition for development, not on the required knowledge as such.

Human societies everywhere have been knowing their way effectively for ages and in fact, when they failed to do so, they paid the ultimate price, as the Norse settlers on Greenland did in the late middle ages (Röling and Wagemakers, 1998; see also Röling, this volume). In modern societies, understanding our social learning processes is no less vital, as both intentional and unintentional consequences impose themselves upon our lives and lifestyles. Also, today our advances in learning are associated with unprecedented levels of complexity, uncertainty and risk. In his far-reaching Eighth Annual Hopper Lecture, Niels Röling leaves not a shred of doubt as to the urgency of coping with these challenges: “Now (...), understanding ourselves as a unique, reflexive, cognitive system is vitally important to our own survival.” Facing this challenge timely and effectively, he asserts, has turned into ‘the next global human project’ (Röling, 2000).

This may have various implications. Understanding ourselves as cognitive beings is a first key, yet understanding how to govern the collective processes of knowing is yet another. Does something like *good governance* exist with respect to knowing - i.e. learning and acting - our way into sustainable development? History may prove a rich source of understanding. To comprehend why some societies or communities failed where others succeeded is crucial to our quest. What characterised the governance of knowing in each case? Does understanding indeed precede good governance? What if, rules of governance forged in the past inhibit effective knowing for the future? Even so, we may discard off-hand, one of our most cherished contemporary myths, namely, that effective knowing is necessarily linked to the use of modern electronic media. Of course, in the world we have created information technologies have opened up a fabulously rich potential for change, yet our principal interest here is beyond media: it is on human and social cognitive practice and its governance.

Having said all that, we have to recognise with Winograd and Flores (1986) that we cannot define our “object of study” objectively. The domain of our inquiries may only “arise in our concerned activities”. Maybe even more than in other fields of inquiry, when looking into the social processes of knowing, informed notions of what might and might not be relevant and interesting, motivate our choices and the distinctions we make. After all, the study of knowledge production, sharing and use has been a battlefield - or market, if you wish - of competing metaphors to help us make sense of what we perceive. Now, if we move to the ‘meta’ level by focusing on governance, such issues are multiplied to the infinite. As a result, our biases and mental models do matter a lot.

As for our biases, we take development to be human-made change, directed at preserving human dignity and improving the human condition. It doesn't occur only in the South, but also in the North, East and West as well. Also, we learned that development is only sustainable when local energies merge effectively with global ones in creating conditions that, at the very least, guarantee as decent a livelihood to future generations as is available now. Within such a process, governance and social knowing are intrinsically linked. Governance, in a society, a community or an organisation, moulds knowing in particular ways, as in turn, knowing itself might push governance towards new ways and forms. Thus, societies may indeed learn pathological behaviours, as in times of civil war, or find their way into the development of a deeply rooted civil society through sustained democratic governance.

Furthermore, we situate our argument within an emerging development tradition that insists on political dialogue, networking, learning and platform building, as well as upon explicit and recognised ownership and operational autonomy of relevant stakeholders and a multi-actor, inclusive approach towards agenda setting and development programming. Development-related governance issues include human rights, democratisation, stakeholder participation, performance assessment and institutional development.

### 3 Rural people, learning and agricultural practices in rural Cameroon

Obate (1992) provides us with an intriguing case of knowing for development over three generations. We see how undoubtedly well-intentioned, but isolated attempts at educating the villagers lead to undoubtedly unintended, yet systematic consequences for local development. We also see that not even the sons and daughters from the local community, after having been schooled elsewhere, are necessarily able to effectively 'listen to the cradle' (Houkonnou, 2002). As a result, local practices, linked intrinsically into particular cosmovisions (Millar, 1996) may have been placed forever beyond their grasp.

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*Box 1: Learning over generations: Whose knowing eventually counts?*

Obate (1992) studied the way different generations in one rural village in Cameroon learned to be farmers. The grandparents told him that, until they were six, children would work side by side with their mothers in the field to learn how they plant and care for the food crops, the family and the community. After the age of six, boys would then work shoulder to shoulder with their fathers, to learn about cash crops, markets and, probably, local politics. After many years of practical learning, they would receive their own plot of land for cultivation, as they became full-fledged members of their local societies.

During the parents' youth, the local schools came. Children would still be trained by their mothers until the age of six, but then would go to the local missionary school. Through gardening projects, working with the missionaries/teachers, they would pick up new technologies and skills. When free from school, during the

planting and harvesting season and during official holidays, they would work side-by-side with their fathers and mothers, and still learn traditional ways. After a limited number of years at school, most of would come back to the village, receive a plot of land and start cultivating it.

Then Obate made the same inquiry with those of his own generation, the sons and daughters. Most would still have had some training with their mothers before the age of six, before going off to school. However, the schools had changed, becoming bigger, better organised and oriented fully towards educating for new lives as urban employees. Generally, school duties and rosters didn't permit children to help their parents out much on the farm. After primary school, they would move away to the nearest town for secondary schooling. From then onwards, they only came home occasionally. Some finished secondary school, others didn't, but most stayed in town to do all kinds of jobs in order to build an urban future. Secondary schools generally didn't include an agricultural curriculum. Some went to technical schools or university and some even studied agronomy and related matters.

When the economy went sour and (government) jobs became increasingly scarce, part of the latter generation was forced to return to the village, where they asked for land and started farming. However, as 'educated people' they showed no interest in the 'traditional' knowledge of their elders, they networked with input suppliers rather than village experts and applied a recipe-like type of technical agriculture to produce their crops. In fact, the distinction between the two last generations became so profound that they grew accustomed to meeting socially in different places, the elders feeling the youngsters' contempt for the traditional way of doing agriculture (Adapted from: Obate, 1992).

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The case illustrates why governing processes of knowing for development is such an evasive issue: How do you govern something that often is not intentional and is neither finished nor even clearly described or delimited? How do you intervene when each context breeds its own process and outputs? Might external intervention per definition breed mismatches between external components, local culture and context? The example illustrates early attempts to 'improve' community learning. At first, intergenerational and peer learning were the dominant mechanisms. Soon, the traditional system was 'enriched' with modern components such as local schools. Still very much integrated into community life, the schools separated children from intergenerational and peer learning mechanisms only to a small extent. Yet, when 'modernisation' really hit, schools started to draw the brightest youngsters from their communities and cut them off from traditional learning opportunities, effectively driving a wedge between traditional and modern modes of collective knowing.

With this, the Cameroon case provides us with a baseline, or at least a starting point. In the period without deliberate governance of knowing, we were dealing with isolated, well-intentioned yet uncoordinated development interventions. Since then, what has knowledge systems thinking taught us about governance of collective inquiry, learning and action for development? Is it possible and worthwhile, to search for ways of facilitating local processes of knowing? Can local actors actually do some-

thing to continue driving their own inquiry and learning? But also, at what cost to pertinence and effectiveness may we frame spontaneous social inquiry, learning and action scientifically? Does attention to governance of social knowing for development actually help, or might it make things worse?

#### 4 Three decades of knowledge systems thinking

One of the first authors to focus on the process of innovation was Ronald G. Havelock, at the University of Michigan, Ann Arbor. His *Planning for Innovation through Dissemination and Utilization of Knowledge* (Havelock, 1973) may be taken as the first attempt to formulate a knowledge systems approach to innovation and change. The metaphor behind his modelling was that of knowledge flows, bridging interfaces between (professional) communities and/or organisations. Knowledge was seen as a commodity, while education itself he saw as a dissemination and utilisation system. Yet at the same time Havelock managed to integrate into his theory much of the then current scientific debate on leadership, communication, organisation, incentive structures, linking roles, types of knowledge, and the social technology and phases involved in natural and planned change processes. With this he set the stage for what has been referred to later as the *hard systems tradition* in knowledge systems research (Engel, 1997).

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##### *Box 2: The Green Revolution: opening many eyes*

The Green Revolution in Asia is often claimed as a significant success of this type of thinking and the institutional designs it produced. The Training and Visit System of Extension (T&V), long favoured as the way forward for agricultural extension by the World Bank, reflects its approach to governance of (technological) development. Large irrigation schemes dedicated to the production of bulk commodities like rice did provide rather favourable conditions for applying such a science-based hard systems approach. After all, the principles behind T&V were developed within such a context. And the T&V system did take on board many of the lessons learned at that time. It recognised technology transfer and adaptation, farmer training and input supply could not be kept in isolation but had to be part of a comprehensive approach to promote adoption of new technologies by farmers. It also introduced management principles into the running of extension and supply services. However, it maintained a fundamentally top-down approach, a technology supply-side orientation, based upon the assumption that technicians know what works for farmers. Eventually, this approach proved unable to deal with more diversified rain-fed agricultural systems and even in Green Revolution areas pathologies appeared, such as excessive use of chemical products by farmers, and wasteful water use by top-enders. Also, vested interests and technology broadcasting approaches by agricultural extensionists proved hard to overcome (e.g. Indonesia see van de Fliert, 1993). When attempts were made to apply this same system to rain-fed areas where resource constraints prevented farmers from apply-

ing the required input packages, for example in Sri Lanka, the T&V system soon became known as the 'Touch and Vanish' system (pers.comm.).

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Hard systems modelling generally prompted researchers and practitioners to think in terms of knowledge flows, reservoirs and exchange. Taking (bits of) knowledge as a commodity meant 'something' could be passed from one actor or community of actors to another. This thinking blended well with the 'diffusion of innovation' logic of the times (Rogers and Shoemaker, 1971), which assumed that personal characteristics play a major role in innovative behaviour. Emphasis was laid on innovators, early adopters, change agents and leadership. Not surprisingly, the 'reservoirs' of knowledge were believed to exist mostly at the scientific end of the equation, from which carefully selected cupfuls were to be passed on and drunk down (adopted) by the local farming community, who would then provide 'feedback' to the scientists. Local people not inclined to adopt the transferred 'water of knowledge' forthwith were labelled laggards, or resistant to change. Intermediary (extension) agencies were set up en masse and later, were the first to be blamed for the failure of the centralised, top-down systems to live up to expectations. Critical evaluations of this type of unilateral top-down thinking and its consequences for development practice arose in force during the late seventies and eighties. These evaluations did much to help understand the systemic nature of human collective cognition, and to move research forward into higher levels of complexity (see for example: Röling, 1986).

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*Box 3: LEISA and PTD: decentralising technology development*

During the eighties, Low External Input and Sustainable Agriculture (LEISA) was put forward as an alternative to high external input production of agricultural commodities. Following Bunch (1985), Chambers et al (1989) and various others, a very different approach to governing inquiry and learning for technology development was proposed. Participatory Technology Development (PTD) emphasises stakeholder participation, networking and local experimentation. Scientific insights complement and strengthen locally available and indigenous knowledge and technologies, not vice versa. Identifying concrete technical options is part of a collective process of identification, agenda setting, study tours and workshops with farmer experts. External experts may participate on specific issues. Experimentation by local farmers and farmer to farmer training provide the setting for evaluating available technical options under diverse local field conditions, while group activities, such as meetings, field days and exchange visits provide ample opportunity for generating and sharing new insights and evaluating local adaptability in a participatory manner. Particular attention is paid to creating local capacity in order to embed the technology development process in the local community. *Source: Reijntjes et al (1992)*

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As far as research was concerned, Rölöing and Engel (1991) *softened* knowledge systems thinking by merging it with Soft Systems Methodology (Checkland and Scholes, 1990). Another source of inspiration was the work by Bawden and Macadam on action researching systems (1991). The result helped to move knowledge systems thinking towards action research with stakeholders. It also fundamentally changed researcher outlooks on systems. Soft systems analysts do not assume systems to exist. Rather, they see social actors as creating and maintaining social interactions as if they were systems, through situation analysis, dialogue and collaboration, in order to alleviate or solve problems, to develop certain joint capacities (e.g. innovative capacity), or to guarantee particular outcomes, such as poverty reduction or sustainable development. The purpose of a system was no longer assumed to be naturally or scientifically determined but instead, understood as an emergent property, interactively brought about by the stakeholders themselves. In their eyes, systems have to do with multiple stakeholders, diverse worldviews, intense social interaction and social problem solving; they are never static, never closed, but always open and on the move. As a result, systems have no clear set boundaries, and many different metaphors can be applicable to their understanding, so that they are *soft* in a very real sense of the word.

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*Box 4: RAAKS, a process approach towards social inquiry and learning*

In fact, the merger with Soft Systems Methodology (Checkland and Scholes, 1990) helped knowledge systems researchers to move away from the dominant metaphors of the past. The systematic use of visualising techniques with stakeholders in the field, generated many new insights into the organisation of multi-stakeholder interaction for (social) knowing. Images of organisation drawn by the stakeholders themselves in order to visualise their local knowledge systems included: relational diagrams, drawings of fruit bearing trees, horse carts drawn by local leaders, descriptions of local school systems, public arenas and institutional battlefields. Probably the most important lesson was a liberating disrespect for the 'correct' use of models. Theoretical perspectives and models were no longer seen as ways to scientifically frame and predict events but rather as 'windows upon the world', helpful only for generating a practical, common discourse among stakeholders to facilitate the debate on useful courses of (collective) action. The practical experiences of large numbers of students, researchers and practitioners were brought together in a participatory action research methodology: Rapid Appraisal of Agricultural Knowledge Systems, or RAAKS (Engel and Salomon, 1997). RAAKS aims specifically at strengthening governance of social and institutional knowing. Apart from Soft Systems Methodology, in its design, other experiences such as Participatory Rural Appraisal (Chambers, 1992) and Participatory Action Research (Whyte, 1991) were incorporated. Consequently, knowledge systems thinking had matured into an action oriented process approach and had developed the method and tools to prove it.

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At Wageningen University and Research Centre, the merger was taken a significant step further. Norman Long's actor orientation (Long, 1992) enabled a profound understanding of the role of agency and power, while Leeuwis, through a critical analysis of some of the main flaws of knowledge systems thinking, introduced Giddens' social structuration theory (Leeuwis, 1993). Irrevocably, social actors - individuals or collectivities able and willing to take decisions and act upon them - were placed at the core of knowledge systems thinking. Interest in rather static, general worldviews shifted towards attention to dynamic sense-making processes at individual and collective levels. Multiplicity and diversity were recognised as basic tenets of successful knowing systems, while collaboration among social actors was found to be the exception rather than the rule (Engel, 1991). Diverse, often conflicting interests among stakeholders were recognised to be prime movers of and/or impairments to innovation and change (Kaimowitz, 1991). Vickers' work (cited in Checkland and Casar, 1986) as well as Lindblom (1990) helped recognise the *appreciative* character of networking for innovation, intrinsically tied into selective perceptions, personal judgements and the need of stakeholders to establish and maintain social relationships with 'relevant others'.

At the same time, clearer focus on social learning inspired new, exciting lines of inquiry (Koelen and Vaandrager, 1994). A practical definition of knowledge - *effective action in the domain of existence* - by Maturana and Varela (1984) provoked a renewed interest in local, social and technical practices, competent performance, and the interplay among practitioners (Gremmen, 1993; Engel, 1997). Röling and Jiggins (1998) broadened the scope of knowledge systems thinking to include ecologically sound practices, learning, facilitation, policies and institutions into one 'ecological knowledge system'. Next to farmer experimentation, networking and social inquiry (Lindblom, 1990) were recognised as organising principles for governing collective knowing, as well as thematic convergence, communication and coalition building (Engel, 1997). Alternative approaches, such as Farmer Field Schools (FFS) for Integrated Pest Management (IPM), offered powerful new models of local governance of knowing for agricultural development (Van de Fliert, 1993). Lopsided, hierarchical institutional configurations, based upon traditional designs that have outlived their usefulness, are identified as a major influence impairing collective innovative performance (Engel, 1997).

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*Box 5: Learning for practice: designing learning among stakeholders*

Tekelenburg (2001) advances exciting lessons from practice with respect to the design and management of collective learning and action. As a technical scientist engaged with peasant farmers in participatory innovation processes in Bolivia, he understood that *learning in practice* and *learning from practice* together with the relevant local actors, can form the basis for designing powerful new theoretical perspectives and methodologies for governing complex processes of social knowing. Recognising the complexity and multiple problem levels implied in rural development issues, he proposes a management toolkit for designing collective learning processes. Through problem identification and analysis, relevant social actors

engage in goal setting, specifying objectives at different levels of complexity. Hence, action levels include: basic research, to determine factor responses; applied research on agricultural practices; hard system design, to achieve optimisation of agricultural (sub)systems; as well as soft system design, to achieve stakeholder satisfaction within a particular development context. Through a focus on interaction between, and integration of the different strands of knowledge generated by different social actors, he showed that concrete solutions can be achieved for specific problems at different levels of complexity. *Source: Tekelenburg (2001)*

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At the turn of the century, mostly under the influence of further study of work by Chilean biologists Maturana and Varela (1984), again fundamental shifts in thinking start to occur. The proposition is summarised by Capra (1996): “In the emerging theory of living systems, mind is not a thing, but a process. It is cognition, the process of knowing, and it is identified with the process of life itself.” And it is the fundamental coupling between the actor and its domain of existence, which triggers continuing learning. Rölöing then proposes the *coupling* between knowing and natural systems as a basis for adaptive management. Eventually, this paves the way for understanding knowledge systems as sense-making wholes, or cognitive systems, which not only enable social actors to create, share and use knowledge effectively but also to play a fundamental role - positive or negative - in determining the direction of change. In such systems, “rationality is the pursuit of structural coupling” which “requires a remarkable mix of consolidation and self-renewal” (Rölöing, 2000).

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*Box 6: Governing higher levels of knowing: platforms for resource use negotiation*

Stakeholders using the same natural resource for various purposes, require building human institutions and a capacity for learning and decision making about ecosystems (Rölöing and Jiggins, 1998). Such institutions may be formal or very informal, but they must enable the respective stakeholders to learn and act collectively and resolve conflicts. Many lessons have been learned in this respect that we will not repeat here. It suffices to refer to the perceptive summary provided by Rölöing and Jiggins (1998) and to Niels Rölöing’s chapter elsewhere in this book. Yet, we feel three lessons merit special attention within the context of this article. The first is that evidence indicates that higher level knowing needs focused facilitation efforts. Next to a conducive policy environment, effective facilitation might well be the single most important factor in avoiding conflict. The second is that it might not be stakeholder interests alone, which determine the feasibility of collective processes of knowing and conflict resolution. Studies of the role of spirituality (Millar, 1996; Haverkort and Hiemstra, 1999) provide exciting vistas upon the relation between ancient indigenous cosmovisions and sustainable practices. Wielinga (2001) in turn calls attention to the living social tissue that interactive networks actually represent. At the same time, recent research points at the need for a systematic inquiry into the actual practices different stakeholders engage in on a day-to-day basis with respect to the contested resource (Engel et al, 2001;

Tekelenburg, 2001). Each of these suggestions of course, points back at Maturana's definition of knowledge as effective action in the domain of existence.

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## 5 Building bridges: the Mlazi River Catchment Management Program<sup>5</sup>

The Government of South Africa recently introduced the new National Water Act, which is aimed at managing water in an ecologically and socio-economically just manner. The Act recognises the need for integrated management of water resources and, where appropriate, the delegation of management functions in such a way as to enable everyone to participate. For the National Water Act to achieve its goal of 'water for all forever', concerted efforts are required to build capacity of people as active and responsible citizens and develop local institutions capable of collectively managing water resources. As a young democracy still affected in many ways from imbalances created during apartheid, a conscious strategy is required to enhance genuine participation of previously disadvantaged communities at different levels.

In 1995, the Farmer Support Group (FSG), a campus-based NGO at the University of Natal in Pietermaritzburg, initiated a program for integrated catchment management (ICM) in the Mlazi River, funded by the Water Research Commission. This led to seven years of mobilising, organising and building capacity of residents, land and water users in different parts of the catchment. From the beginning, it was clear that a multi-pronged approach was required to develop an enabling environment for effective individual and collective action. Four main areas of intervention were identified (table 1).

Firstly, there was a need to *provide land use options* that were ecologically, socially and economically sound (productivity). Work focused on promoting sustainable and organic farming among large-scale commercial and small-scale subsistence farmers and gardeners. A research farm was developed to demonstrate the economic and ecological viability of organic farming and wetland conservation. Secondly, a process of *capacity building* was required for resource poor communities to negotiate improved access to resources and services and achieve food security (equity). Community gardeners were assisted to market their produce through local supermarkets. Craft groups were formed and strengthened to develop and market traditional and new crafts to generate income. Thirdly, *raising awareness and education* were seen as key to put environmental issues on peoples' agendas and to develop a catchment identity (environmental education). Primary and secondary schools were encouraged and supported in establishing environmental action clubs. A newsletter was published four times per year, to inform residents about issues related to the catchment, as well as a map depicting the health of the river.

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5 Adapted from: Farmer Support Group (2002). Scientific report Mlazi River Catchment Management Programme 2000-2001. WRC Project no: K5/1157. Water Research Commission, Pretoria. Unpublished report.

<p>Ecologically sound farming Productive water use Grazing management Community gardens Land care</p> <p>Productivity</p> <p style="text-align: center;">↓</p>	<p>Access to training, advice and technical support services Income generation Food security</p> <p>Equity</p> <p style="text-align: center;">↙</p>
<p>Structures for collective action</p> <p>Conservancies Water User Associations Sub-catchment committees Catchment Management Forum Local and Traditional authorities</p>	<p>Environmental education</p> <p>←</p> <p>Newsletter Bio-monitoring Environmental action clubs</p>

Table 1: Mlazi River Catchment Management Programme: elements of governance

Finally, individuals and groups needed to be mobilised around issues related to the catchment. Sub-catchment committees, conservancies, environmental committees, etc. needed to be formed and/or strengthened to assure all residents a voice in decision making. Once these institutions were operating effectively, a multi-stakeholder forum would be formed to collectively manage resources in the catchment.

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*Box 7: Multiple goals set for facilitation of capacity development and learning*

The vision of the ICM Program was that by the year 2004, the people living in the catchment would ensure that the river and its tributaries were respected and cared for by complying fully with the law as it relates to their own land use:

- Keeping agriculture, forestry, industry and mining out of the riparian zone
  - Reducing the levels of pollutants generated
  - Recycling and treating pollutants that are generated
  - Setting appropriate water quality and pollution load standards
  - Monitoring water and environmental quality to ensure compliance
  - Establishing a data base of river quality through regular bio-monitoring, and
  - Participating, through conservancies and sub-catchment committees.
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In 2001, the project team set out to summarise the achievements to date. Community gardeners were interested in learning more about organic farming methods. Four craft groups had been formed and trained and were able to support their families from income generated from craft. Events like Water Week, and Arbour Day were celebrated to raise environmental awareness within the catchment. Twenty-eight environmental clubs had been formed at schools. Health of the river was assessed three times per year through bio-monitoring. The results were integrated in a map pub-

lished in a catchment newsletter, which helped catchment residents to understand the impact incorrect land use has on the health of the rivers. Three sub-catchment committees had been formed in the upper and middle catchment, as well as committees for environmental action, which acted mainly as platforms for conflict mediation e.g. for illegal hunting, impounding of livestock, and plantation fires. Some members from rural communities had been encouraged to participate in committees to monitor landfill sites. The Department of Water Affairs and Forestry (DWAF) had organised workshops on the proposal for a Catchment Management Agency (CMA). At the same time, the team also concluded that individuals and groups in the catchment still relied heavily on the presence and input from FSG programme staff. Sustainable land-use and farming practices were not applied widely among gardeners, despite training and followup support received over the years. Craft groups didn't develop initiatives to organise transport to urban markets and relied on program staff for marketing and sales. Schools were not yet able to run their environmental clubs effectively on their own. Also, despite the fact that many children and adults had been trained in bio-monitoring, this activity continued to be seen as FSG program responsibility.

From the onset, it was expected that decentralisation of activities by DWAF would benefit local communities. Sub-catchment committees were seen as the main link between communities and CMA while they were expected to function as a platform for conflict mediation between White and Black communities as well. However, while DWAF had started proceedings for setting up the CMA, locally based structures, like the sub-catchment committees, were not taking part in the meetings. The election of a catchment committee to coordinate the activities of sub-catchment committees, as was required by law, had not been effectuated. Other stakeholders in the catchment had also not been identified. Limited staff capacity at DWAF was mainly to blame for its failure to actively engage the major players. Given the fact that the FSG Mlazi River Catchment Management program was to end in 2002, the conclusion was that sustainability of the results might be jeopardised, since FSG would no longer be there as a 'mover and shaker' to support and monitor the formation of the CMA.

From the above we may draw some tentative conclusions as to the tricky questions involved in creating institutional frameworks for governing collective knowing with respect to natural resource management. As a pilot, the Mlazi River Catchment Programme enjoyed a relatively high level of resources. It has shown that even after seven years of facilitation, neither catchment management nor sound land use, are established well enough to continue without further external support. However, the case also demonstrated that it is possible to bring communities together in a way, which allows them to better relate to one another and to their local environment. Quantifying this is very difficult, but the active participation of many local people in the programme activities did mean improved human capacities while team members remained available to contribute to ongoing development activities.

However, the reason why community participation has been poor in the process of establishing a local catchment management agency seems to relate to the fact that people feel they will not be helped by an agency too remote to achieve anything practical. Collective action at the local level is considered a more likely route to bring

about improvement. It is expected therefore that some of the local groups will continue to work towards improved management of their environment, while others will collapse when dedicated support and facilitation cease. Attempts have been made to set up more permanent local institutions, which may continue to support local initiatives.

A main conclusion is therefore that facilitation at the local level is far more likely to produce real progress, even if it is modest. Facilitation of large-scale institution building efforts takes a long time and has to be backed up by adequate resources.

## 6 Governance of knowing for development: some lessons and challenges

As illustrated above, the lessons from knowledge systems research and related field experiences have been abundant. Many approaches to governing collective knowing for local development have been proposed and successfully applied on a limited scale. Yet many more challenges lie ahead. With Niels Röling (this book), we believe these have to do mostly with moving beyond the aggregation of individual preferences towards inclusive and interactive social knowing in order to deal with complex socio-natural dilemmas effectively. We propose that, next to a profound understanding of collective human cognition, this requires an even more focused effort than before to come to grips with its governance. The following are some of the suggestions we feel both practitioners and researchers may take into account.

- 1 First, we would like to point at the need for facilitating the construction and/or validation of a resource-based identity and action perspective. Whether its primary source is ancient wisdom, awareness of interdependence or plain practical interest, such an identity is essential to provide collective knowing with a potential for convergence and hence, concerted action among stakeholders.
- 2 We also see the need for a multi-pronged approach. Experiences so far have indicated that, to concentrate on one level of complexity, on just one of the many inter-related issues at stake or on just one or some of the relevant stakeholders, is a recipe for failure. A comprehensive approach based on a rich combination of methods and tools and aiming at diverse spheres of interaction is required.
- 3 Then, it seems that approaches that help focus immediately on issues of correspondence between social and natural systems and practices (or lack thereof), such as a territorial approach or a catchment area approach, provide a sound basis for creating successful cognitive systems.
- 4 Also, we feel no single model for understanding “good governance” for social knowing, whether a network, a platform, a theatre or a battlefield, will provide guarantees for successful governance in practice. Stakeholders will probably have to develop their own guiding metaphors along the way. Facilitators may help, through visualisation, imaging or scenario exercises, but mostly by respecting the process nature of collective knowing.
- 5 Of course, collective knowing requires a joint capacity to appreciate what is relevant and what is not and to make choices, in situation analysis and planning, in

weighing options, in self-organisation and in communication and learning. Identifying, creating and strengthening such capacities with stakeholders deserves particular attention on the part of facilitators.

- 6 Most experiences indicate that the establishment of effective arrangements for collective knowing for development require a well-resourced and well-focused effort on the part of intervening parties. Time spans are long; processes, open-ended; and facilitation efforts, complex and multi-faceted. Active engagement in concrete problem solving may be required alongside capacity building, organisational and communication efforts. Often additional resources are required to mitigate short-term adverse consequences for particular stakeholders.
- 7 Again, our practical experience supports the well-known need for transparency and mutually agreed principles and procedures of governance (Ostrom, 1990), such as performance assessment and evaluation and, if necessary, sanctions. On the role of the facilitating or broker institution, a whole new chapter is still to be written.

We would like to conclude by underlining a few of the many challenges ahead. We asked ourselves whether local actors could actually do something to safeguard driving their own inquiry and learning. From the many examples, we may certainly draw a positive answer. But as the Mlazi case illustrates, it is certainly not automatic. Considerable investments in strengthening local as well as administrative institutions and the communication among them are necessary over prolonged periods of time. The commitment on the part of the national government to create and maintain a conducive policy environment has to be genuine, and is to be translated in specific laws and regulations. A further inquiry into the results of far-reaching law making with respect to local participation and indigenous rights, in for example, Bolivia and South Africa, is called for. Yet another question is harder to answer: at what cost to pertinence and effectiveness may we frame spontaneous social inquiry, learning and action scientifically? At the very least, it calls for further research on the impairing influences donor or elite-driven models for capacity and institution building, communication, decision making and conflict resolution may have on collective local knowing. This only serves to underline that serious attention to governance of collective knowing for development is required. We hope we have convinced you too.

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