



## Sigtuna Think Piece 6

### A Case of Exploring Learning Interactions in Rural Farming Communities of Practice in Manicaland, Zimbabwe

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#### **Abstract**

*Food insecurity is one of the major threats to sustainable development in Africa, and particularly southern Africa. Climate change is increasingly having negative impacts on food production, further increasing the vulnerability of resource-poor communities. This paper outlines a research study conducted in two Zimbabwean smallholder communities of practice, with the aim of understanding learning interactions taking place within the community of practice that influence its choice of cultivated food plants. This would hopefully inform capability-centred teaching and learning. The study was conducted in the context of vulnerability to environment risk, socio-political pressures and a market-oriented agro-based economy in recession. Various causal mechanisms influencing plant-food choice were identified using critical realist ontological analysis. These included mixed messages from external influences in conflict with local knowledge due to power knowledge relationships. A number of learning interactions were found to be important in promoting the adaptive capacity of the farmers to chronic drought, which included inter-generational knowledge sharing; farmer to farmer exchange and reflective dialogue; experiential learning; farmers 'passing on' part of their harvests to other farmers; farming communities learning from risk and responding to risk; and learning from trying things out. The implications for capability-centred social learning processes were that it is important to understand the causal mechanisms that influence choices; and to confront tensions, while reducing ambivalence. A focus on more sustainable alternatives, feasible and practical for farmers, was recommended. These findings, in the context of one case study, create research questions to be examined in other case contexts in environmental education research focusing on climate change learning and adaptation.*

#### **Research Context, Background and Methodology**

Food security in the context of agro-biodiversity conservation has become increasingly important for Zimbabwe as a nation and at household level, especially during the post-land reform era (1999 to present). For many centuries, traditional open-pollinated food plants, careful seed selection and conservation, and traditional cultivation methods have played a vital role in ensuring household and community food security. Such indigenous food security practices were characterised by diversity, variety and exchanges of seeds, crops and vegetables among local farmers<sup>2</sup>. Some of these plants include sorghum, millet, rapoko, brown rice, maize, groundnuts, cow peas, cucurbits, green leafy vegetables, sweet potatoes and yams, giving a good mix of starch, protein, oils, vitamins and minerals. A careful combination of some of these crops was commonplace in traditional mixed cropping systems (Murwira, *et al.*, 2000; Food and Nutrition Council of Zimbabwe, n.d.).

Unfortunately, the combination of frequent and prolonged drought cycles, market-oriented agricultural policies introduced during the colonial period, a depressed economy and socio-political instability brought about by the land reform programme in independent Zimbabwe (post-1980) have led to widespread food insecurity. Research published by the United Nations Environment Programme (UNEP 2006) indicates that there have been at least four drought periods hitting southern Africa between 1986 and 2003: the first being 1986/87, followed by the 1991/92 season, which was described as severe; and then 1994/95, which was described as the worst drought in memory, and lastly the 2001–2003 drought, which was described as another severe drought in the Southern African Development Community (SADC) Region. In the UNEP report, the 2001–2003 drought period singled out Zimbabwe in particular (and other countries northwards) as worst affected. Western countries, in a bid to help the region, have in the process included genetically modified (GM) grain and seed in their food aid and recovery packages.

Risk factors affecting food security also include the self-validating reduction of certain nutritious foods due to their false associations with poverty and backwardness (Jickling, *et al.*, 2006). The Food and Nutrition Council of Zimbabwe (n.d.:16) observes that ‘In Zimbabwe today many people are turning away from a healthy traditional diet because they think it is inferior to a western diet. This results in people eating less healthy food.’ The role of environmental education under these circumstances is to improve the knowledge and awareness of new possibilities and of risk, in order to reduce its impact (Beck, 1999). In addition, education has the potential to improve reflexivity among communities of practice (Wenger, 1998) on some of the dangers associated with modern unsustainable agricultural practices that are increasing genetic erosion, knowledge loss and food insecurity.

While many modern agricultural practices can be described as unsustainable or damaging to the environment (Shiva, 2000), modernisation and conventional agriculture did not bring all the ills. Today the potential exists to combine modern approaches with traditional food production systems to address shortcomings and to provide broader, more holistic approaches to food security. This has been seen to be possible in a system that recognises and promotes the smallholder farmer as a distinguished experimenter and researcher in traditional food security practices. Evidence of research on learning that takes place in communities of practice of rural farmers is scarce, and yet such research could provide pointers to improving agency and food security in such contexts (see also Mukute, this edition).

My research interest in this study was to understand the learning interactions that contribute to the dual functions of food security and sustainable agriculture within selected communities of practice (Wenger, 2000) of communal farmers in the rural Nyanga and Mutare districts of Manicaland Province in Zimbabwe. The study involved interviews, observations and document analysis focusing on farming interactions in these two case study contexts, complemented by contextual profiling, which included historical and contextual research into factors shaping the experiences of the farmers (e.g. recurrent drought conditions; availability of support services for farmers; economic conditions, etc.). This generated data on learning interactions in the two community of practice contexts, and the influences shaping these learning interactions, which was analysed using two theoretical lenses, namely communities of practice theory and critical realist ontological perspectives. Given my interest in learning interactions and thus relational dynamics

of the learning process, I tried to identify theoretical vantage points that would assist with a relational analysis. Learning in communities of practice is influenced by structures that may either support the process and result in a positive change, or constrain the agency of people learning in a community of practice. To further clarify my understanding and use of critical realism in this study, I worked with such concepts central to sociological analysis, as the perception of reality, power, structure and agency, causations and causal analysis.

The study was undertaken with an interest in generating reflection on learning interactions that could help to improve the quality of practice of all stakeholders, especially that of communal farmers themselves, extension officers and other development agents, and help educational researchers concerned with such conditions as described above, to undertake new forms of research into farmers learning in communities of practice.

### *A Community of Practice Epistemological Lens*

Lave and Wenger's (1991) recently conceived 'communities of practice' concept that embraces a situated learning theory provides useful tools in helping to understand the role of social learning (in this case amongst small grains farmers, nutrition garden groups and bee-keepers). I consider these farmers to be communities of practice because they are learning together, with minimum external support, how to choose and grow appropriate crops for food security and agro-biodiversity. For example, they are growing the same small grains together and passing on seed to neighbours to reduce risk of avian (bird) destruction, but also extending an age-old traditional practice of sharing that ensured community seed security. A community of practice is described as different from a community of interest or a geographical community, because these do not imply a shared practice. Hence, not every community is a community of practice (see also Downsborough, this edition).

Wenger (2007:1) defines communities of practice as 'groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.' A community of practice thus defines itself along three dimensions:

- What it is about – its *joint enterprise* as understood and continually renegotiated by its members
- How it functions – mutual engagement that binds members together into a social entity
- What capability it has produced – the *shared repertoire* of communal resources (routines, sensibilities, artefacts, vocabulary, styles, etc.) that members have developed over time. (Wenger, 1998:2, my emphasis)

Communities of practice are self-organising systems that develop around things that matter to people (e.g. food security) and also move through various stages of development characterised by different levels of interaction among the members and different kinds of activities. The three characteristics of a community of practice are:

1. A shared domain of interest. Membership implies commitment to a domain (e.g. crop farming), and thus shared competence that distinguishes members from other people
2. The community members engage in joint activities and discussions, *help each other and share information*

3. Members of a community of practice are practitioners who develop a shared repertoire of resources forming a shared practice: i.e. *experiences, stories, tools, ways of addressing recurring problems*. (Wenger, 2007:2, my emphasis)

The research orientation and theoretical framework of this study reflects an underlying assumption of an epistemology and ontology grounded in shared practice. It also supports the view that there is more than one way of viewing reality, allowing for equal consideration of, and respect for the contributions of members of the communities of practice under study, as they come from different backgrounds, and may bring in different experiences due to social dynamics such as migration and training. Salomon (as quoted in Daniels, 2001:70) refers to this concept as ‘distributed cognition’, whereby cognition is distributed among individuals and knowledge is socially constructed collaboratively, thus making it essential for a community of practice to share common resources.

Seed security is a moral imperative and the cornerstone of food security in subsistence rural communities. It has seen these communities live and survive over many years in good and bad times. Modernistic developments and climate change have brought with them several challenges for these communities. According to Willemsen, *et al.* (2007:465) ‘... for more than 800 million people living in the more marginal and heterogeneous areas, food security and poverty continue to be a daily challenge’.

### *Critical Realist Ontological Analysis*

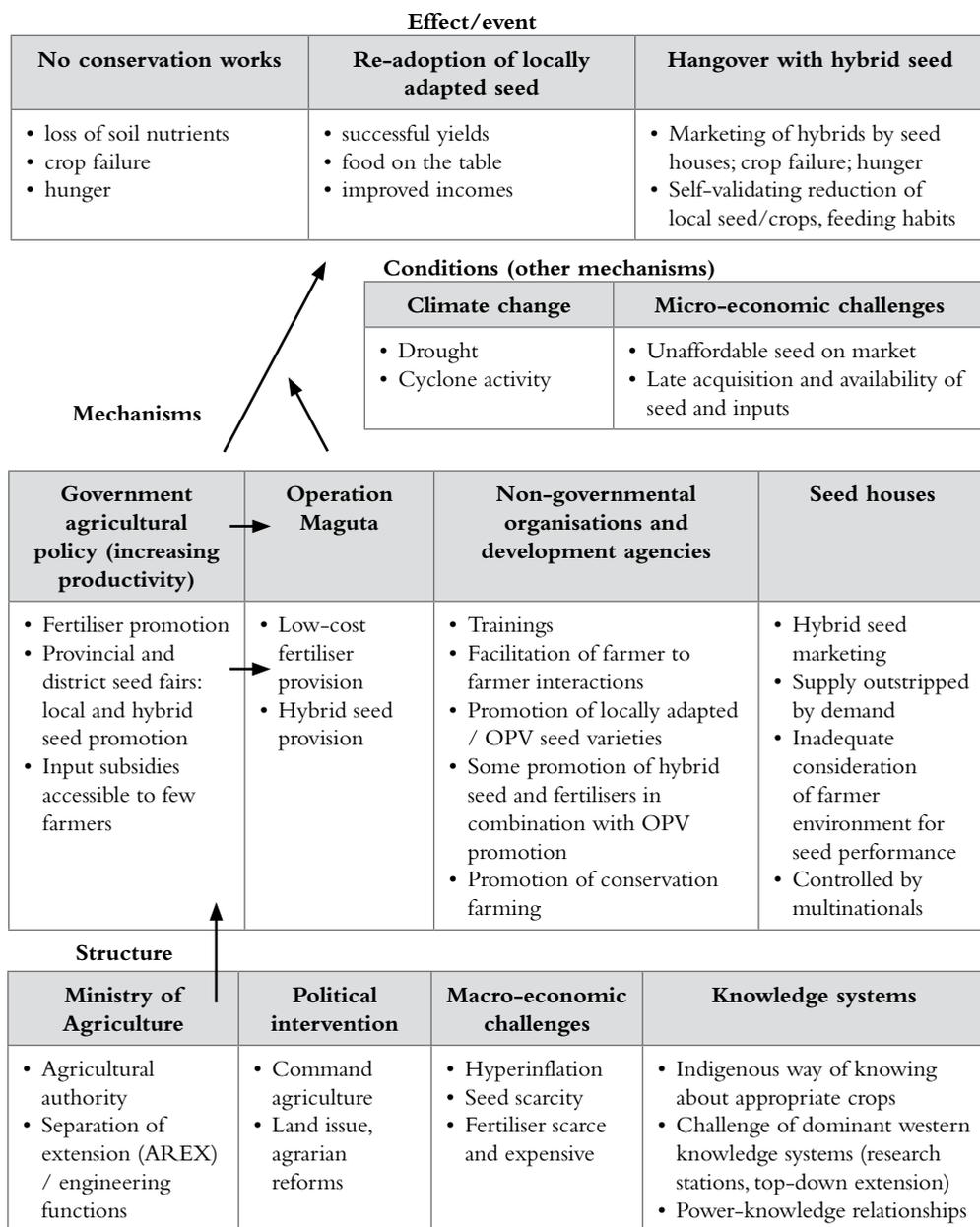
Critical realism, like the communities of practice perspective, is a relational theory that was relevant in gaining a deeper insight into examining the data. According to critical realism, the world is inherently transformative, with more than one dimension of reality. There is thus a concern with explanation (Delanty, 2005). A critical realist perspective provided a model for explaining how effects are brought about (causations), with a view that there are different levels of causative factors, and diverse ways in which these ‘play out’ and influence people’s experiences (which is seen as one of the ‘layers’ of reality in critical realism). These causal factors can be unpacked through a causal analysis relating potential causes and effects, and in the context of this study, between learning and choices. According to Wilkgren (2004:13) ‘critical realists are concerned with ontological depth and identifying causally efficacious mechanisms.’ Drawing from Baskhar’s writings, she sees critical realism being used to analyse more deeply what potential underlying causes are of events and experiences in a wider context.

### **Causal mechanisms influencing choice**

This case study showed that farmers select seed to plant for food as a result of various learning interactions they engage in, which include inter-generational knowledge transfer, farmer to farmer extension and external training by extension organisations and non-governmental organisations. A critical realist causal analysis was conducted to unravel the various causal factors influencing choice. A number of underlying structures and causal mechanisms were found to influence learning interactions and choices in these communities of practice, and they include ambivalence, which influences the changing domain and practice. Figure 1 is a causal analysis

of ambivalence found among the farmer communities of practice. Climate change, drought and risk were found to affect farmer practice, while power relations affect the community, its practice, domain, sponsorship and the learning interactions in the communities of practice. The political economy was also found to have a profound effect on the domain and practice.

**Figure 1.** A causal analysis of ambivalent messages (Pesanayi, 2008)



### **Critical reflexivity, capability-centred learning and agency**

Conditions presenting themselves to the communities of practice of farmers, such as increased drought from climate change (see Figure 1), caused farmers to question their knowledge and practices. This opened up critical thinking and reflection about the types of seed to sow and accompanying inputs and the values surrounding associated choices of seed, especially when their livelihood and wellbeing were threatened. Farmers also challenged the constraining structures that encouraged conventional green revolution approaches to farming. They began to place more value on indigenous knowledge practices, such as choice and exchange of locally adapted small grain seed, which had been discarded by new technologies and which they reclaimed with tremendous agency when reintroduced. This agency appeared to be enhanced by familiarity with revalued knowledge, which gave farmers and their communities of practice the confidence to influence once-dominant structures such as techno-centric extension. Government policy has been observed to shift over the years to promote what it saw working in the communities of practice by promoting small grain farming as an approach to food security.

As an influence of drought threats to food security, and an opportunity for farmers to critically reflect on their practice, a space was found for the influence of capacity and knowledge sharing in participatory frameworks of the communities, implying that extension quality can be enhanced to promote locally adapted and diverse seed varieties for food security improvement. The study showed that a deeper understanding of the mechanisms influencing the context of teaching and learning provides a more refined insight into the learning interactions and choices of farmers.

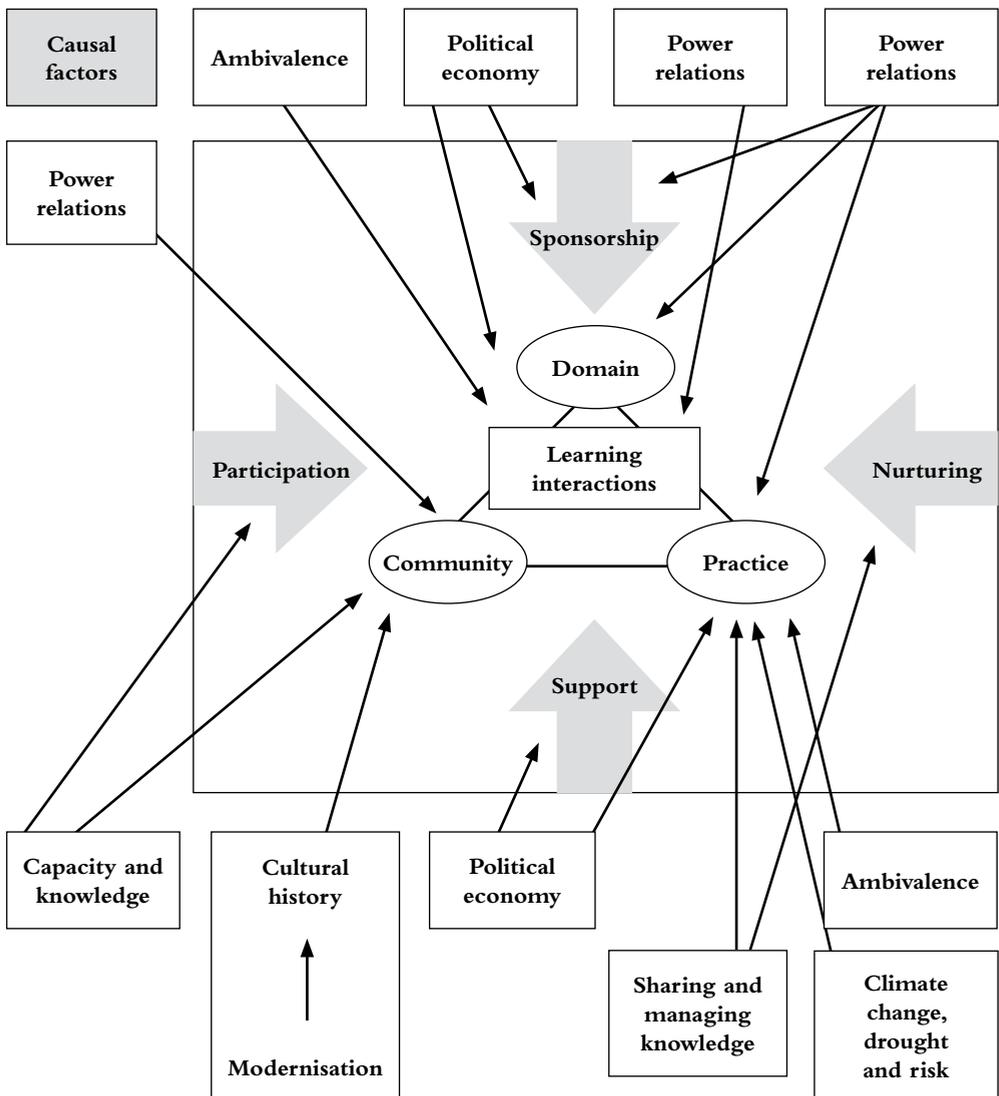
This study showed that learning processes oriented towards capability for risk negotiation in the everyday involve inter-generational knowledge sharing, drawing on new knowledge from training interventions, processes of trial and error, and dealing with ambivalent messages and uncertainties through reflexive processes of dialogue and social interaction. This provided insight into enhancing understanding of the processes of building capability for risk negotiation in the everyday (see Figure 2).

Figure 2 shows that the domain is what keeps the communities of practice of small-holder farmers together, and gives it identity. In this case the domain (growing of small grains) is changing to accommodate more sustainable approaches. However, forces exist that can confuse the knowledge in the domain, and these are ambivalent messages which include promotion of fertilisers, green revolution technologies such as monocultures, and inappropriate crops (for example hybrid maize in hot dry and rain-fed areas), while negating traditional locally adapted crops. However, as a community of practice has members learning together, with a little support from extension services and others, the promotion of local knowledges and varieties without such mixed messages as explained above has the potential to improve the practice of the community, and hence food security.

Figure 2 shows that there is a diverse range of factors that influence learning interactions. These different mechanisms influence how the learning interactions take place, for example, what actions are possible, what negotiations take place, what people reflect on and how people communicate (Wildemeersch, 2007). Actions referred to here are processes of social action linked to social learning, and these include engaging in participatory processes such as farmers

planning together to improve their nutrition garden and helping each other in small grains farming. Such actions ‘are triggered by a particular need and a set of competencies’ (*ibid*:100), in this case the need being food security and the competencies including agronomic practices of small grain production, processing, storage and use. Learning thus happens where there is a tension between capability and a deficit of capacity. This way ‘social learning [takes] place in groups, communities, networks and social systems that operate in new, unexpected, uncertain and unpredictable circumstances ... [solving] unexpected context problems’ (*ibid*:100).

**Figure 2.** How underlying structures and causal mechanisms influence learning interactions and choices in communities of practice



## *A Theoretical Critique*

It was clear from the study that a community of practice epistemology on its own was not adequate to explain the learning taking place among the farmers and with other players, such as family members, and external agents such as development workers for example. Inter-generational knowledge transfer, for example, cannot be explained by communities of practice alone, yet it came out strongly as a significant learning interaction. Hence a more in-depth study using other theoretical frameworks such as genealogy and cultural historical activity theory may need to be used to explore other learning interactions taking place and thus linking more with the historical context. In addition, communities of practice perspectives are associated with the notion of 'legitimate peripheral participation (LPP)' (Lave & Wenger, 1991), which inaccurately assumes that all so-called newcomers in a community of practice are novices who need apprenticeship before they can fully and adequately participate in the community of practice they are joining. Legitimate peripheral participation in this case would thus conflict with the idea of 'distributed cognition' described by Vygotsky (Daniels, 2001), and observed among the members of the communities of practice in this study.

## *Conclusion*

The results of the study concluded that there are multi-level learning interactions that take place within communities of practice of rural smallholder small grain farmers, which may have positive or negative effects on their choices of food crops. The research also showed that these choices are influenced by a range of causal mechanisms, some of which can be addressed in extension and education programmes (e.g. the issue of ambivalent messages and valuing of traditional knowledge) while others cannot (e.g. macro-political economy). This has significance for considering a research agenda for climate change education research as it may not be possible to respond to the causal factors creating climate changes in rural community contexts (e.g. over-production of carbon dioxide in developed countries), but it may be possible to identify other aspects that one can respond to through education and extension, for example, enhancing diversity of crop production to be more drought resilient; re-appropriation of useful indigenous knowledge; reduction of ambivalent messages amongst extension services, etc. As shown by this study, this requires careful contextual and sociological analysis of learning interactions in communities of practice.

External interventions need to capitalise on and improve productive and learning-centred social interactions in order to assist farmers to make their own informed choices that can be easily adopted, and protect farmers' rights in order to enable farmers to adapt to changing circumstances, especially climate change (their changing domain). Vulnerable communities are sources of knowledge for adaptation strategies to climate change, if their socially constructed knowledge is valued, and if the power of distributed cognition that exists in communities of practice can be mobilised. As the curricula of agricultural training institutions and the policies in the Southern African Development Community are reviewed, an orientation to

sustainability needs to be investigated in terms of its responsiveness to the realities of climate change in order to be relevant to new needs and improve people's capabilities for adaptation. This research project represents an example of examining the relationship between learning and capabilities development in contexts of increased drought conditions (which are one of the effects of climate change in rural southern Africa). As such, its theoretical tools and empirical findings provide useful openings for further research in this area.

### *Notes on the Contributor*

Tichaona Pesanayi is the manager of the Southern African Development Community's Regional Environmental Education Programme, which works in 14 southern African countries. His research interests include learning interactions amongst farmers in rural areas, as well as policy responsiveness and relevance. This research paper is drawn from his Masters degree, which focused on understanding learning interactions in farming communities of practice in rural areas in Zimbabwe. E-mail: tich@wessa.co.za

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