



# Cultural Historical Activity Theory, Expansive Learning and Agency in Permaculture Workplaces

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## *Abstract*


*This paper reports on how Cultural Historical Activity Theory was used to identify and analyse contradictions; model and implement solutions in the learning and practice of permaculture at one school and its community in Zimbabwe. This is one of three sustainable agriculture workplace learning sites being examined in a wider study on change-oriented learning and sustainability practices (Mukute, 2009). It gives a brief background to permaculture and the School and Colleges Permaculture Programme (SCOPE) in Zimbabwe. The paper focuses on how contradictions were used as sources of learning and development leading to 'real life expansions'. This demonstrates and reflects on the value of an interventionist research theory and methodology employed in the study to enhance participants' agency in sustainable agriculture workplaces.*

## *Introduction*

There are many ways in which knowledge has been conceptualised. In this paper, I look at how knowledge has been used for the development of agency. Knowledge, in this sense may be seen as 'capacity for action' as derived from Francis Bacon's observation that '*scientia est potentia*', which suggests that knowledge derives its utility from setting something in motion (Stehr, 2001:497). The translation of Bacon's observation to 'knowledge is power' is somewhat misleading because, as Stehr (2001) notes, *potentia* means capacity. The notion of agency has been a subject of discussion by leading scholars such as Archer (1996), Sibeon (1999), Giddens (1984) and Emirbayer (1997). In this paper I will use agency in the sense that Engeström (2008) used it – taking intentional transformative action based in an interpretation of the situation and after a search for resolutions to contradictory motives, tools or conditions. Agency in this sense is therefore found residing in causing human action as Table 1 shows.

Cultural Historical Activity Theory (CHAT) informed the study, which also employed the associated methodology of Developmental Work Research (DWR), discussed in more detail below. The methodology shows how the study moved from the interpretive to the agentic, resulting in agency by research participants.

**Table 1.** Three layers of causality in human action (Engeström, 2008:17)

Interpretive layer	In the actor	Takes into account according to this and that logic	If X, then Y  Rule, law
Contradictory layer	As participant in collective activities	Is driven by contradictory motives	Searching for resolution by often unpredictable actions
Agentive layer	As potential individual and collective agent	Takes intentional transformative action	Inventing and using artefacts to control the action from the outside

### *The Context*

The paper is drawn from a workplace learning research project on how and why farmers are incorporating sustainability in their agricultural practices and how such learning and practice can be expanded, that is, how their agency can be enhanced. The project is based on three case studies of permaculture in Zimbabwe; organic farming in South Africa and Machobane Farming System in Lesotho (Mukute, 2009). This paper discusses the Schools and Colleges Permaculture Programme (SCOPE) in Zimbabwe – one of the three case studies in the wider study. Permaculture is a land-use design system that seeks to create the most beneficial and productive relations between elements in a system while respecting and copying nature (see Table 2).

**Table 2.** History and main features of permaculture

	<b>Permaculture practice (Mollison, 1991)</b>
History	<ul style="list-style-type: none"> <li>• Developed by ecologist Bill Mollison in the 1970s in Australia in response to industrial-agriculture pollution, land degradation and biodiversity loss.</li> <li>• Introduced in southern Africa in the late 1980s.</li> </ul>
Main features	<ul style="list-style-type: none"> <li>• Create beneficial relationships between different elements in the system.</li> <li>• Grow as many diverse species as possible and use as many diverse production processes for nutrition, medicine, beauty, spiritual and economic value.</li> <li>• Take the long view and plan for long-term sustainability.</li> <li>• Recycle, reuse and reduce waste.</li> <li>• Build and enhance the number of beneficial relationships in a system to achieve stability.</li> <li>• Copy the processes of nature to allow an environment to sustain itself naturally.</li> </ul>

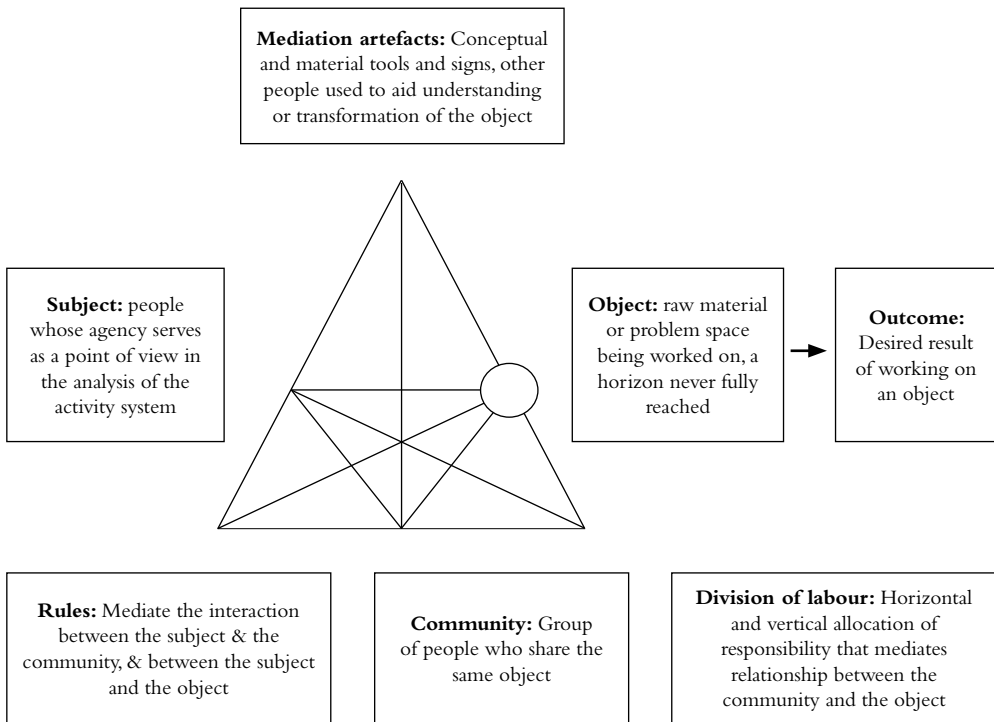
SCOPE was developed to promote, ‘sustainable land use of school and college grounds and homesteads in the surrounding communities’ and the integration of ecological principles into the curriculum (Nyika, 2001:125). It was started in the mid 1990s in Zimbabwe, with support from the Ministry of Education which allowed the programme to work with pilot schools (Mtetwa, 2006). Between 1994 and 2008, the number of schools involved in SCOPE

increased from two to 126, covering all the districts of the country. Today 13 teachers' colleges and six colleges of agriculture participate in the programme, with two universities providing advisory support. SCOPE introduced a cluster system at district level where six or more schools are supported by a lead member to establish permaculture in the school and the surrounding community. Following its success in Zimbabwe, a regional SCOPE programme was established in 2007 to provide training and support to other countries (M.W. Nyika, personal communication, 5 September 2008). The introduction of permaculture in schools and colleges where the mainstream curriculum was built on conventional agriculture and the agricultural policies of the country created structural tensions that are still being grappled with today. This programme was considered as an appropriate case study of workplace learning research since, while being located at schools, it provides a centre of learning for farmers, and involves agricultural extension staff. Schools often provide important centres of learning in rural community contexts, and as such were considered appropriate for a study on workplace learning for farmers in a southern African context.

### *Cultural Historical Activity Theory and Expansive Learning*

Cultural Historical Activity Theory (CHAT) provides a theory and methodology to examine how groups of people with different experiences and perspectives working on the same object can work on new problems and jointly develop new knowledge or tools to address the problems (Engeström, 1987, 1999; Daniels, 2008). Learning within a CHAT perspective is seen to take place in two main ways: through internalisation and externalisation. Externalisation happens when a person or a group of people creates new knowledge or solutions. Internalisation takes place when an individual makes sense of available cultural capital in his/her social relations, thinking and actions. Learning that encompasses both internalisation and externalisation, is called expansive learning (Engeström, 1999). Second and third generation CHAT provides the scope to work with local and broader contexts that have a bearing on the learning of sustainable agriculture practices. Second generation CHAT covers rules, community and division of labour, subject, object, and mediation and tool relations (Figure 1). The third generation covers a number of second generation activity systems that are interacting.

**Figure 1.** Second generation activity theory



(Adapted from Engeström, 1987)

Engeström (2001) identified five principles guiding CHAT:

1. The prime unit of analysis is a collective, artefact-mediated and object-oriented activity system seen in its network relation to other activity systems;
2. Activity systems are multi-voiced and are a nexus of many points of view, traditions and interests. Multiple layers and strands of history are embedded in the rules and division of labour. The multi-voicedness of the activity systems is a source of both tension and innovation;
3. Activity systems take shape and are developed over long periods of time and should be analysed in terms of their local history, objects, outcomes and genealogy of conceptual tools that have shaped it over time;
4. Contradictions between and within activity systems are potential sources of change and development; and
5. Activity systems have the potential for expansive transformations, which occur through relatively long cycles of qualitative transformations.

Engeström (1987) identified four kinds of contradictions; *primary* – which happens within elements of an activity system; *secondary* – between elements of an activity system; *tertiary* – which happen when the object of the central system clashes with that of a historically

more advanced activity system; and *quaternary* – which occur between central activity and its neighbouring activity systems. Engeström (2001) noted contradictions in activity systems are a guiding principle for empirical research. Within Developmental Work Research (DWR), CHAT methodology provides an expansive learning process which is concerned with iterative knowledge construction and application that emerges from contradictions that exist in or between activity systems. Expansive learning has the following stages:

1. Questioning: drawing on researched evidence to question existing practice or existing wisdom;
2. Analysing: tracing and analysing the history and current dynamics of learning and developmental problems in the practice;
3. Modelling: involves the construction of new ways of working or engaging with practice;
4. Examining the model: experimenting with the new model to fully grasp its dynamics, potentials and limitations;
5. Implementing the model: working with the model in real life situations and monitoring its impacts;
6. Reflecting: Using monitoring data to evaluate the model for refinement;
7. Consolidation: Implementing the refined model into a new, stable form or part of practice (Engeström, 1999).

### *Research Process*

The research project being reported here employed double stimulation during Change Laboratory workshops, with ‘mirror’ data gathered prior to the Change Laboratory workshop providing the first stimulus and the expansive learning process providing the second. Change Laboratory workshops are a methodological tool used by Engeström and developmental work researchers to study the agentic learning process, and resultant changes.

#### **Data collection**

One of the more significant methodological points in CHAT is the process of researching with people involved in various activity systems. The first level of engagement with research participants took place in August 2008 and involved three semi-structured individual interviews and two semi-structured group interviews. The group interviews were for a group of four farmers and another of three teachers and are represented by Z2 and Z5 respectively.<sup>1</sup> Four farmers and six permaculture facilitators participated in the research. In February 2009, a five session, four day Change Laboratory workshop was run and in September 2009 a feedback workshop was held. The details of the Change Laboratory workshop are described in Table 3.

#### **Data analysis**

The primary approach to data analyses was double hermeneutic which was used because it resonated with the interventionist research process, developed over time with the participants in the case study sites. Cohen (1989) pointed out that first order analysis is linked to the agent’s awareness and second order exceeds it but preserves it with a view to altering the agent’s knowledge and foster change.

**Table 3.** Summary of data generation and sharing in Change Laboratory workshops

Session	Focus/thrust	Case Details	Research participants
One	Orientation to the workshop and tools and doing a historical timeline of the practice in the area under study	This involved sharing the activity systems and the expansive learning cycle. It also involved the telling of their different histories with permaculture.	Workshop was attended by 4 farmers, 4 permaculture facilitators; 4 pupils and 1 government agriculture extension worker. It took place over 4 days and for about 10 hrs. Researcher served as facilitator and had an assistant
Two	Identification of contradictions by participants and presentation of mirror data (contradictions) by researcher	Issues were identified in three groups of teachers as facilitators of permaculture; pupils; and farmers. The government agriculture extension officer worked with the group of farmers. The researcher presented mirror data. The workshop participants then ranked issues and worked on five.	
Three	Analysing contradictions	Contradictions were analysed in mixed groups of permaculture facilitators, pupils and farmers to take advantage of distributed cognition. They were analysed in terms of history, causes and effects.	
Four	Developing model solutions (and critiquing them)	Participants broke into two groups, and each developed solutions to three problems. Each had to write a letter summarising the causes, effects and model solution being suggested. The plenary presentations served as the first stage of critiquing the adequacy of the model solutions.	
Five	Way forward	Participants decided to form a committee and elected office bearers to carry the process forward. The committee included people and stakeholders who were absent. Targets for lobbying and persuasion were also identified.	
Six	Feedback workshop	Research participants reported on the progress they had made in implementing their modelled solutions. I reported on what was emerging from the research, thanked them for participating in the research and bid them farewell as I was 'leaving the field'. The workshop lasted three hours.	

## Findings

### Interpretation of learning and practice motives

Early analysis of data revealed why farmers, teachers and pupils in SCOPE learn and practice permaculture. This paper focuses on farmer motives and this part of the process lies in the interpretive layer of Engeström's three-layered causality for human action and forms part of the first stage of the expansive learning cycle (Table 1). The study suggests that the motives for farmer learning and practising of sustainable agriculture are several and do cover the three forms of sustainability discussed by Yunlong and Smit (1994) – economic, social and ecological. In particular farmers are interested in increasing food production, income generation and resource base potential. Table 4 shows some of the reasons why farmers engage in permaculture. There were also intrinsic motives cited by farmers. For example in Group Interview #Z2, a point was made about going into farming because it is in one's veins:

*Researcher:* What motivated you to go into farming?

*Farmer AB:* I was born to a farmer. I grew up farming ... I have been farming since the 1980s.

The study also focussed on permaculture facilitator's motives for teaching permaculture, which were primarily to promote human health and wellbeing, as well as agrarian sustainability, food production, and education for sustainable development.

**Table 4.** Summary of farmers' motives for learning and practising permaculture

Farmers' object	Evidence and descriptions
Food production & income generation; affordability; and soil and water conservation; agro-biodiversity	<p><i>Researcher:</i> Could you explain your scores,<sup>3</sup> especially the high score on the economic?</p> <p><i>Farmer Mu:</i> You see, there is very little one must spend in order the produce. Besides, with intercropping, you can produce a lot of crops at the same time, each with a different value. The other thing that we do here is to make sure that there is something growing in each part of the garden during most time of the year. You see that the tomato crop has been harvested. We have plans for these beds. What makes this kind of agriculture sustainable is that you produce one crop after another, continuously.</p> <p><i>Farmer AB:</i> The social is high because you do not talk about survival of the fittest. Everyone, even the poor people can practise Permaculture or sustainable agriculture. Most of the resources are locally available. For manure you can go and collect humus from the mountains. I know of some families whose lives were transformed by zero tillage.</p> <p>(Interview # Z2)</p>

**Table 5.** Permaculture facilitators’ motives for ‘teaching’ permaculture

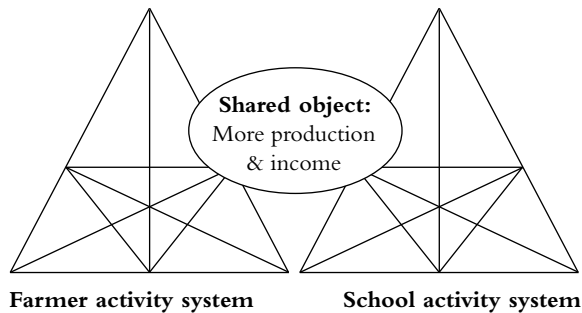
<b>Permaculture facilitator object</b>	<b>Evidence from descriptions</b>
<p>Promote agrarian and sustainability education (education for sustainable development)</p>	<p><i>Facilitator JW:</i> During that time, Andrea Mercier was looking at how Fambidzanai could be used in relation to <i>Education with Production</i>. I recommended that we offer permaculture as the main theme at the Fambidzanai Training Centre. (Interview #Z4)</p> <p><i>Facilitator PS:</i> For me the most frustrating thing is when we go far to train farmers and never have an opportunity to follow up. I did this once recently when I taught a group of farmers in Mashonaland Central. There is no way of telling whether the learning is being applied. What could easily happen is that the farmers did not get something right and they practice it and it does not work. (Interview #Z3)</p> <p><i>Facilitator AM:</i> The course, which is on Integrated Land Use Design, is attended by pupils, community members, who are farmers and community leaders. After the course, the school often gets its seeds and other materials for the garden and the orchard from the surrounding community. The school and the community conduct look and learn visits together. The exchange of planting materials is continuous. (Interview #Z1)</p>
<p>To promote human health and nutrition</p>	<p><i>Facilitator MY:</i> More recently, and in response to the HIV and AIDS pandemic, we introduced a nutrition garden for orphans. From it, we sell vegetables and the money is used for paying the orphans’ school fees. SCOPE also bought two goats towards the orphans’ project. Each child has a chance to get a goat, which they can use to build small livestock in the family as serves as a potential source of income in future (Interview #Z5).</p> <p><i>Facilitator PS:</i> The surrounding community has good access to herbs on the ground, which is important given the problems associated with AIDS and the low availability of drugs. The school has even established a nutrition garden to support orphans ... In permaculture, a farmer grows many different crops including maize but when they value they just look at maize yields and ignore the pumpkins, cow peas, sweet canes and other crops which may also have higher nutritional value. (Interview #Z3).</p>



### Working with contradictions for learning in change laboratory workshops

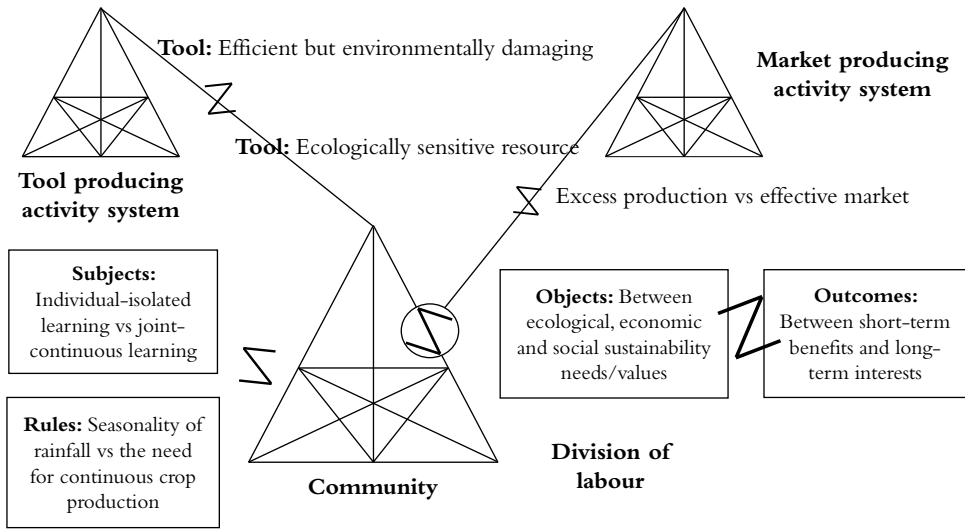
As the research programme has an interest in change oriented learning, a key aspect of the analysis was the identification of contradictions, as these, according to Engeström (2001) provide spaces for expansive learning. This constitutes the contradictory layer (Table 1) and the first stage of the expansive learning cycle. Participants in the SCOPE Change Laboratory workshop were permaculture facilitators in the school, permaculture pupils and farmers, and a government agricultural extension worker from the community (Table 3). Based on ‘mirror’ data generated in the interpretive stage, a shared object between farmers in the community and permaculture facilitators in the school was developed and is depicted in Figure 4. The shared object of the two activity systems was increased food production and income generation of the area.

**Figure 2.** Shared object of farmer and school activity system



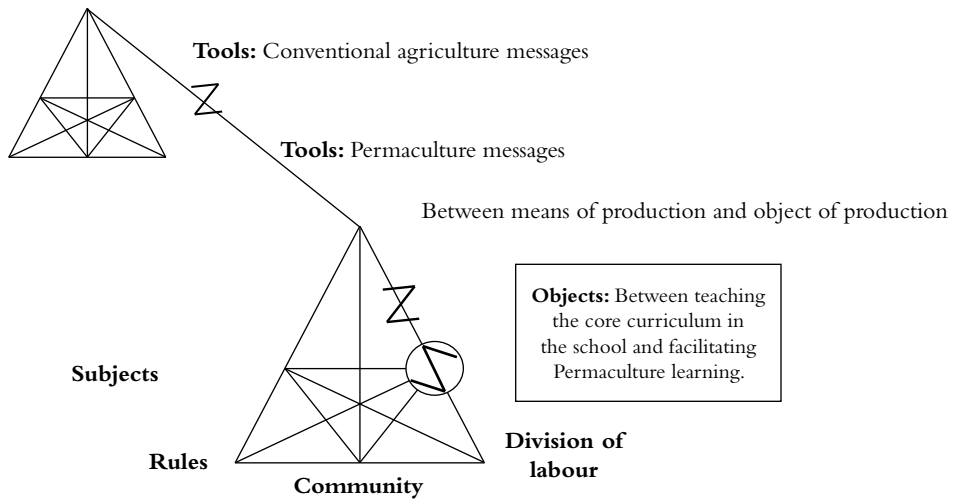
*Contradictions in two SCOPE activity systems:* The contradictions in the farmer activity system in the SCOPE case study are represented in Figure 3. There are primary, secondary and quaternary contradictions revealed in the farmers’ activity system which were between short term benefits and long term interests of permaculture as ecological processes take long to establish and maintain, while short term benefits can be obtained from using fertilisers and other methods that are not ecologically friendly (a contradiction in the object and in the mediating tools); between individual, isolated learning, and collective forms of learning; between the social, ecological and economic dimensions of sustainable agricultural practice; and between the produce and the time it took to produce and the availability of market mechanisms.

**Figure 3.** Contradictions in the SCOPE farmer activity system



The contradictions in the St Margaret Primary School activity system are shown in Figure 4, which also shows three layers of contradictions: primary, secondary and quaternary. These included contradictions between conventional agriculture messages and permaculture practice messages, between the means of production and the object of production (not enough time and resources for the anticipated results); and between the teaching responsibilities of the facilitators – mainstream teaching and permaculture teaching.

**Figure 4.** Contradictions in the St Margaret Primary School activity system



*Problem analysis and solution modelling:* During the workshop, the contradictions cited above were discussed as learning and development problems because that is more familiar language to work with. After conducting an analysis of the problematic situations, the next stage was to analyse them, with a view to developing solutions. Contradiction analysis belongs to the second layer in the causality table (Table 1) and to the second stage of the expansive learning cycle. Solution modelling marks the beginning of the agentive layer and is the third stage of the expansive learning cycle. The analysis and the model solutions are captured in the two letters that research participants developed in relation to their shared object and the production and marketing related tensions that they were facing. In order to draft the letters, participants conducted an analysis of the problematic situations which they had ranked. The analysis involved looking at the history of the issue, its causes and effects. Research participants then broke into two mixed groups where they outlined solutions before tasking some members of the group to design letters, which were read out in the respective groups for improvement before sharing in the plenary. The letters that were shared in the plenary, which are of interest to this paper are indicated below. The problem of water and electricity in the school, which the letter to the headmaster discusses, deals with the contradiction between the means of production and the object of production and the letter drafted by farmers is concerned with the problem of marketing and transport and the contradiction here is between the (surplus) production – supply and effective demand.

*A committee to take on the tasks as another part of the model solution:* Research participants decided that for their solution to be implemented, they needed a structure to carry these forward and they formed a committee during the 5<sup>th</sup> session of the Change Laboratory workshop. Its task was to polish the draft letters and present them to the responsible authorities for action. The committee further committed itself to recruiting more members from the community in order to strengthen its capacity. The formation of the committee was therefore part of the 3<sup>rd</sup> stage of expansive learning cycle and part of the agentive layer of the causality table (Table 1). The actual taking of the letters to other groups in the community, which happened outside the Change Laboratory workshop, was the 4<sup>th</sup> stage of the expansive learning cycle. The research of the actions from here on belonged to the agentive layer of the causality table.

#### **Traces of agentive talk<sup>4</sup> in the letters and interviews**

Both letters show that the research participants were interested in taking action, exercising agency and this is captured in their agentive talk. For example, both letters conceptualise a number of options or envision new models of the activity – the networked activity system in this case. These are stated in the form of recommendations. Each outlines concrete actions that should be taken to address the need state in the school. The letter to the councillor has a more explicit commitment by the research participants who undertake to mend the road as a stop-gap measure towards ensuring that their surplus produce which would contribute to economic sustainability could be achieved. The tone of the letters also suggests that the solutions being proposed are doable.

**Table 6.** Letters as model solutions

<b>Letter to address agriculture production problems in the school (excerpts of solutions)</b>	<b>Letter to address marketing problems faced by farmers (excerpts of solutions)</b>
<p>To: The Headmaster, St Margaret Primary School r.e.: Water problem at St Margaret Primary School.</p> <p>Dear Sir/Madam</p> <p>This letter serves to enlighten you about the level of water problem at this institution. We will include the problems, cause, effects and trends in this write-up. At the end I will try to make recommendations for this problem.</p> <p>The real water problem came when there was an electric breakdown along the line which leads to our school ...</p> <p>Remember teachers will be motivated to work where there are enough resources. Hence with this shortage of water, your school might end up with less qualified personnel ...</p> <p>After all permaculture activities were generating income for the school. Because of this situation, the school is no longer benefiting from the project.</p> <p>As a means of trying to alleviate this problem, we have decided to write this list of recommendations for you to consider:</p> <p>Recommendations</p> <p>We thought you could start by educating the community about the importance of water and its sources. The community should also respect electric wires as they provide a service to the community. Another important recommendation is that you should provide alternative ways of providing water for the school such as drilling boreholes, use of windmills which uses wind instead of electricity. If funds permit, you should think of buying a diesel engine or a solar powered engine. Generators also can substitute electricity problem.</p> <p>If you and your committee still insist on ZESA power, you should try to form a committee, which should have to communicate with ZESA to find out what stops them from coming to make the repairs. Once the committee gets communication from ZESA, it will sit down with the local community to arrange for what the ZESA people want. If it is possible for ZESA, then the community will have to do it.</p> <p>Yours faithfully Group B</p>	<p>To: The Councillor, Chigondo Ward r.e.: Marketing and road network</p> <p>I write to let you know the above project which is in your ward has some problems which need your attention urgently. The problem has reached a high level of production of permaculture produce...</p> <p>Marketing: The produce is of high quality and toxic free because we discourage the use of artificial chemicals both for spraying and soil enrichment ... At the same time, most of the perishables are decaying and being sold at a loss.</p> <p>Road network: Since our road is not regularly serviced, the few motorists who use it are charging unmanageable fares of which we end up working for them and not for our reward. So if this situation remains, there is going to be a decline in the group's production and general development in your ward.</p> <p>Hence we are requesting you to forward our plea for assistance as you sit for council meetings. As a group, we have agreed ourselves to fill in some of the bad patches in the roads which have been caused by erosion. This is a temporary solution. We ask you to put a proposal for a tarred road in your agenda. Once our proposal meets a positive response, we believe there will be great change in the group, community and the ward at large.</p> <p>Yours sincerely Group A (Group Secretary)</p>

Prior to the holding of the workshop, during data gathering, there were many instances in which research participants used agentic talk, some of it to suggest that growing permaculture practice was very likely based on current and emerging developments and others that suggested envisioning new solutions and situations. Some of the statements are captured below:

*Facilitator JW:* The sustainable development discourse has created a huge potential for sustainable agriculture. There is a will which there never was 20 years ago.

*Researcher:* Anything else you would like to say on the subject?

*Facilitator AM:* Nothing. However, I wish to point out that the discussion has got me thinking about a number of issues that I have always taken for granted. I hope that this study will help SCOPE reflect on some of its work so that it can improve.

*Researcher:* What can be done to improve learning of permaculture among farmers?

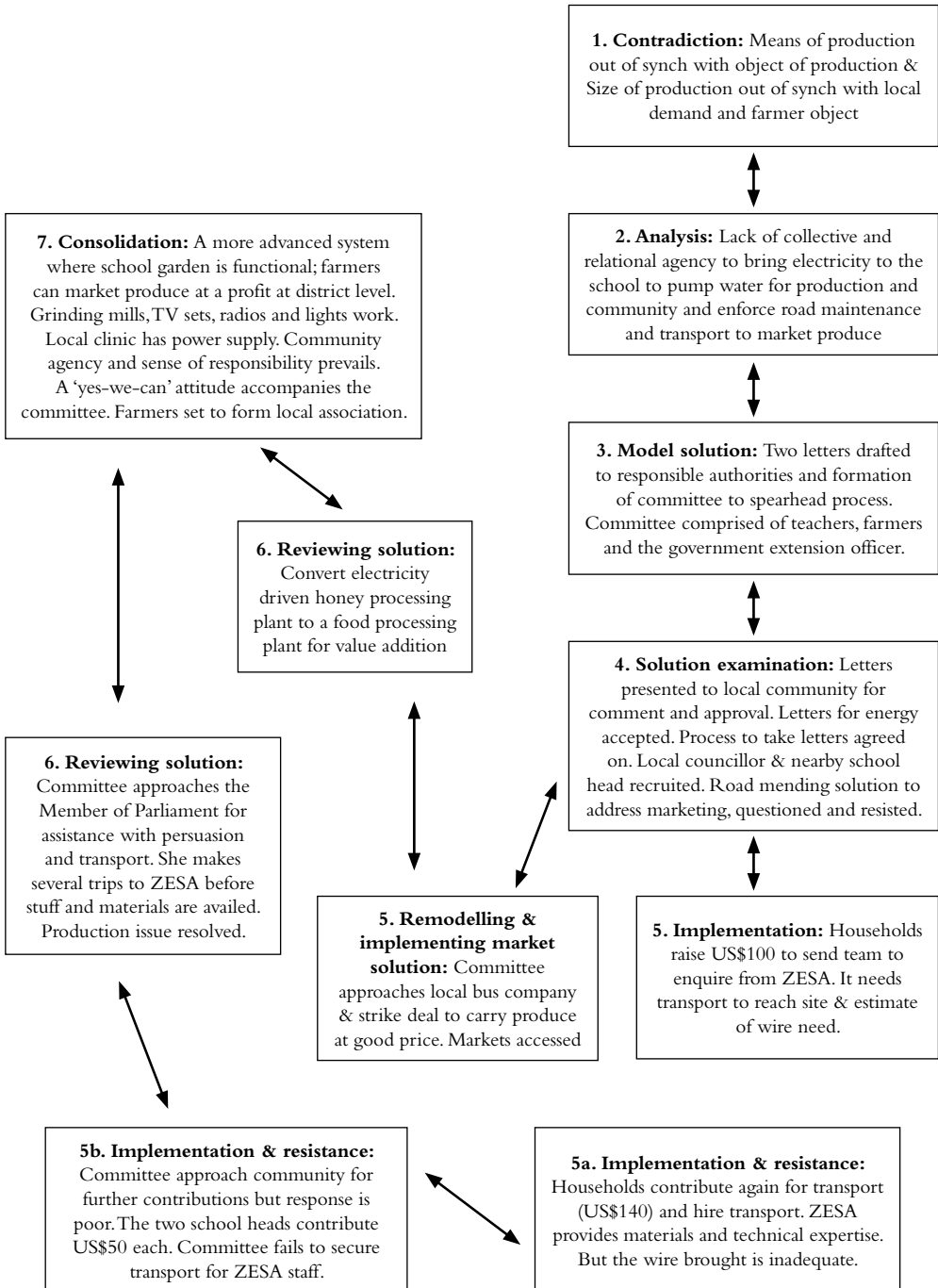
*Facilitator JW:* One of the keys is to try and get farmer education happening among farmers on a continuous basis. Farmers need to have their own study groups. There is need to develop a culture of learning at farmer level. This is how farming improved in Europe in the late 1800s and early 1900s. The idea of folk schools in Denmark is a case in point.

*Facilitator PS:* Right now we have worked on one cluster in the district and do want and need to move to other clusters but there are no resources for this. Our vision is for every school in the country to practice permaculture.

*Farmer AB:* For anyone to succeed, they must have a goal in life ...What we want here is to produce first for food security and then for the market. We treat farming as an industry, a business. In this sense, we see ourselves as commercial farmers.

Seven months after the development of the solution, I, as developmental-work researcher, met with research participants to share progress made in connection with the study. In the meetings, which constituted the 5<sup>th</sup> session of Change Laboratory workshops, it was clear that the research participants had proceeded along the expansive learning cycle. They had taken action, implemented, exercised agency, and were considering another intervention in anticipation of new contradictions as shown in Figure 5.

**Figure 5.** Expansive learning process in the SCOPE case study



### *Discussion of the Expansive Learning Process*

Figure 5 summarises the expansive learning process that happened in the farmer and school activity systems, which culminated in improved real life situations – or change oriented learning and sustainability practices. They drew on the distributed knowledge and power that was available in their activity systems. Their actions were creative and transformative. The germ cell of the process appears to be two layered: the formation of a (developmental) committee to work on the transformation of the situation; and the drafting of concrete proposals as to what could be done to address production and marketing limitations in the face of the need for food in the school system and the lack of water to produce it; the excess production among permaculture facilitators and the high cost of transport to market the produce. This involved identifying and articulating contradictions, deliberation and reflection, and ‘agentive talk’ (i.e. articulating intentions to act, and showing how prior experience can be mobilised into feasible practices). A number of obstacles were encountered along the way which made the path to a more advanced activity system<sup>5</sup> non-linear. The process of addressing the issue appears to have increased the capabilities of the members of the community in terms of negotiating, making connections with those with political and cultural capital as well as for mobilising resources from the community. The other capability which appears to have been build is attitudinal which generated a ‘yes-we-can’ mentality, despite substantive contextual complexities (e.g. high costs, etc.). In short the research process increased the group’s individual, relational and collective agency.

### *Conclusion*

This paper has shown how empirical research by interviewing several actors in the SCOPE activity system revealed the understanding and logic of farmers and permaculture facilitators in learning and practice of permaculture. In the process of gathering evidence, the research was able to surface contradictions beneath the problems that were highlighted by research participants through looking at the their collective activities – as farmers in the school community and as a school practising permaculture – illuminating contradictions in two interacting activity systems in one case study. The study also shows how agentive talk was captured in the letters and subsequently how those letters were used as tools in talking concrete actions that not only marshalled the contributions of the headmaster and the councillor to whom the letters were addressed but also resulted in the recruiting of more members of the community, including a nearby school and the local member of parliament. Households in the community contributed money that was invested in addressing the contradiction. In the action of addressing the need for production in the school and the lack of tools to produce, mobilisation of individual, relational and collective agency took place. During the process of implementing the solutions, a series of problems were encountered and research participants, together with other members of the community demonstrated reflexivity. The study suggests that the expansive learning process can be an effective tool for researching change-oriented learning and sustainability practice where the intention is to stimulate responsible action and set change in motion.

### *Notes on the Contributor*

Mutizwa Mukute is a PhD student in Environmental Education at Rhodes University. His research, from which this paper is drawn, focuses on exploring and expanding learning processes in sustainable agriculture workplace contexts based on permaculture in Zimbabwe, Machobane Farming System in Lesotho, and organic farming in South Africa. E-mail: mmukute@yahoo.co.uk

### *Endnotes*

- 1 This is important to note because where a series of connected statements are made on a particular point, the reference to the interview only comes at the end, after the last speaker.
- 2 Research participants' names (e.g. Mu, AB, PS) were coded in all cases to maintain anonymity while at the same time be able to trace their contributions.
- 3 Research participants were asked to assess three dimension of sustainability in agriculture by giving a mark out of ten and this constituted a score.
- 4 Agentive talk includes explicating new possibilities or potentials by drawing from the past positive experiences; envisioning new models of the activity; and committing to concrete action (Engeström, 2008).
- 5 A more advanced activity system is one that has resolved structural contradictions and it become better than before and therefore more historically more advanced.

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