*How people
think affects
what they do*

Understanding the Olifants as a system

UNDERSTANDING THE OLIFANTS AS A SYSTEM

"How people think affects what they do"

USAID: RESIILIM O

USAID's RESILIM-O program aims to reduce the vulnerability of people and ecosystems through improved transboundary governance and management of natural resources. The program is grounded in a grassroots approach to understanding the systemic causes of vulnerability, including climate vulnerability, and promoting new ways of thinking and acting to promote integrated water and biodiversity management. Our focus on systems thinking and social learning are key innovations designed to institutionalize integrated, resilience-based practices in the Olifants Catchment.
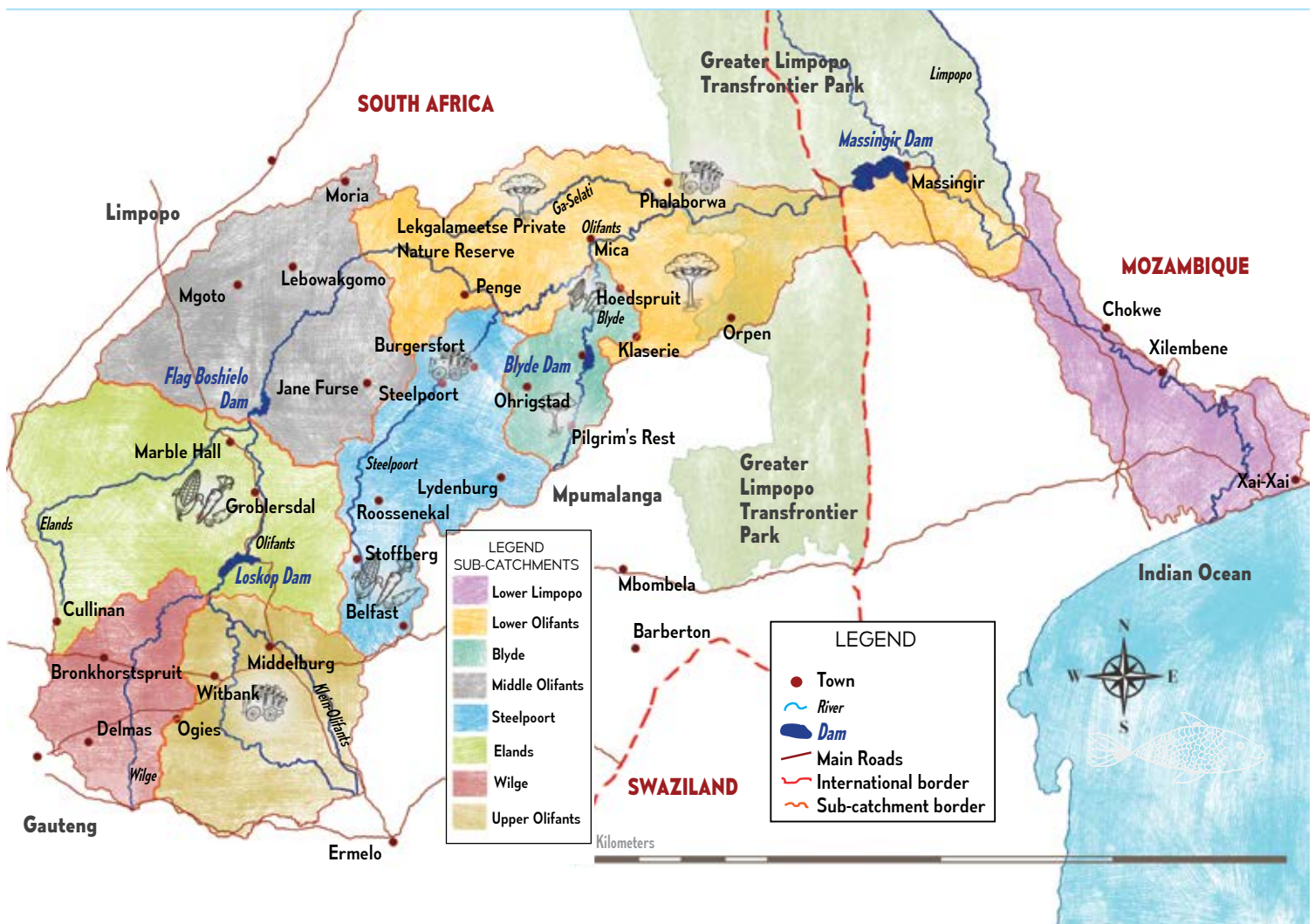
ASSESSING RESILIENCE

The starting point for USAID: RESILIM O is a resilience assessment process. It is being designed and tested by AWARD as an alternative to the conventional risk assessment approaches. The central idea is that risk needs to be understood systemically and by those experiencing the risk – whilst also benefiting from new knowledge.

Participation is a key design element in the resilience assessment process. In order to develop the adaptive capacity of those living in and managing the Olifants Catchment, AWARD is committed to a social learning process. This involves working with people and organizations in the water and biodiversity sectors in South Africa and Mozambique to understand the state of natural resources, the drivers and threats to these and the impacts on livelihoods.

WHO WE ARE WORKING WITH

We are working with forums, community members, traditional authorities, farmers, the mining sector, research institutions, local and national government and other interested and affected parties.

THE OLIFANTS CATCHMENT

HOW PRACTICES AFFECT RESILIENCE

The things that people and organisations do, affect the Olifants Catchment in different ways. As part of the resilience building process, we are looking at what practices are important because of how they affect the system and make it more or less resilient to change. We are particularly interested in practices that will help the system to cope with changes brought about by drivers like climate change.

LOOKING AT PRACTICES

We are looking at practices through a framework called Cultural Historical Activity Theory (CHAT). Practices include things like waste water treatment; co-management of protected areas and land restoration.

CHAT CONTRIBUTES TO THE RESILIENCE BUILDING PROCESS IN A FEW WAYS.

Firstly in the resilience assessment process, CHAT provides a framework for us to begin to log activities that may need to be worked on for transformation.

Secondly CHAT as a theory of learning supports the social learning agenda of USAID: RESILIM O. It makes use of resilience analysis tools e.g. concept maps; causal loop diagrams, as tools for mediation in order to make disturbances and innovations more visible and analysable to both the stakeholders and the interventionist researcher.

Lastly, the product of the resilience assessment process is a resilience plan. In many cases, CHAT provides a framework for transformation that goes beyond resilience planning. It does this through expansive learning or developmental work design. This helps bring about the changes in practices that are necessary for a more resilient system.

WHAT IS CULTURAL HISTORICAL ACTIVITY THEORY?

Cultural Historical Activity Theory (CHAT), also known as activity theory, is a philosophical and cross-disciplinary framework for studying different forms of human practices as developmental processes. It links individual and social levels simultaneously. Activity theory is a framework from which various methods and theories for analysing human activity can be developed. Activity Theory interprets practice as activity and human activity is taken as the basic unit of analysis when using this framework. Practice is unpacked using the concept of an activity system.

' The framework presents a collection of basic theoretical concepts to help understand the relationship between the human mind (consciousness) and activity (what people do) .

GENERATIONS OF CHAT

CHAT has evolved through three generations as follows:
• First generation takes mediated action as the unit of analysis.
• Second generation takes the collective Activity System as its unit of analysis.
• Third generation takes two or more Activity Systems with a partially shared object as the unit of analysis.

First Generation of CHAT

The first generation of CHAT, attributed to Vygotsky and Leont'ev, consists of a basic Vygotskian mediation triad linking subjects, object and tools (Figure 1). It has been suggested that "agent-acting-with-mediational-means" is the basic unit describing human activity. The point is, whereas other species act directly upon the object of interest to them, humans on most occasions interpose a mediating artefact between themselves and the object of interest, thereby enabling them to act more effectively.

Vygotsky concentrated on the symbolic mediation of culture, analysing the relationship between human action (the individual) and cultural artefacts (tools). His argument is that people learn from their culture and history by applying its conceptual and material tools to transform the object. One of the most important results of his work was the linking of the individual to the environment using tools for mediation, moving away from the tradition of treating people apart from their cultures.
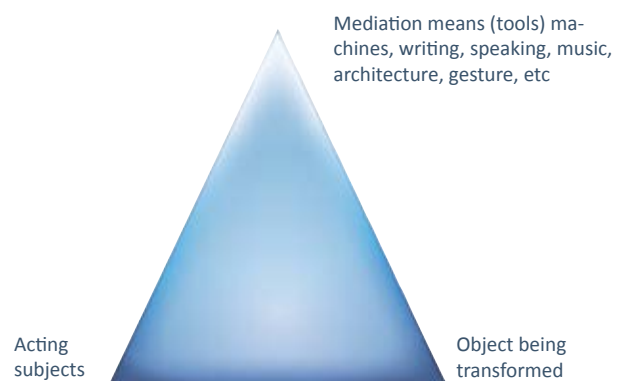

Mediation means (tools) machines, writing, speaking, music, architecture, gesture, etc

Acting subjects

Object being transformed

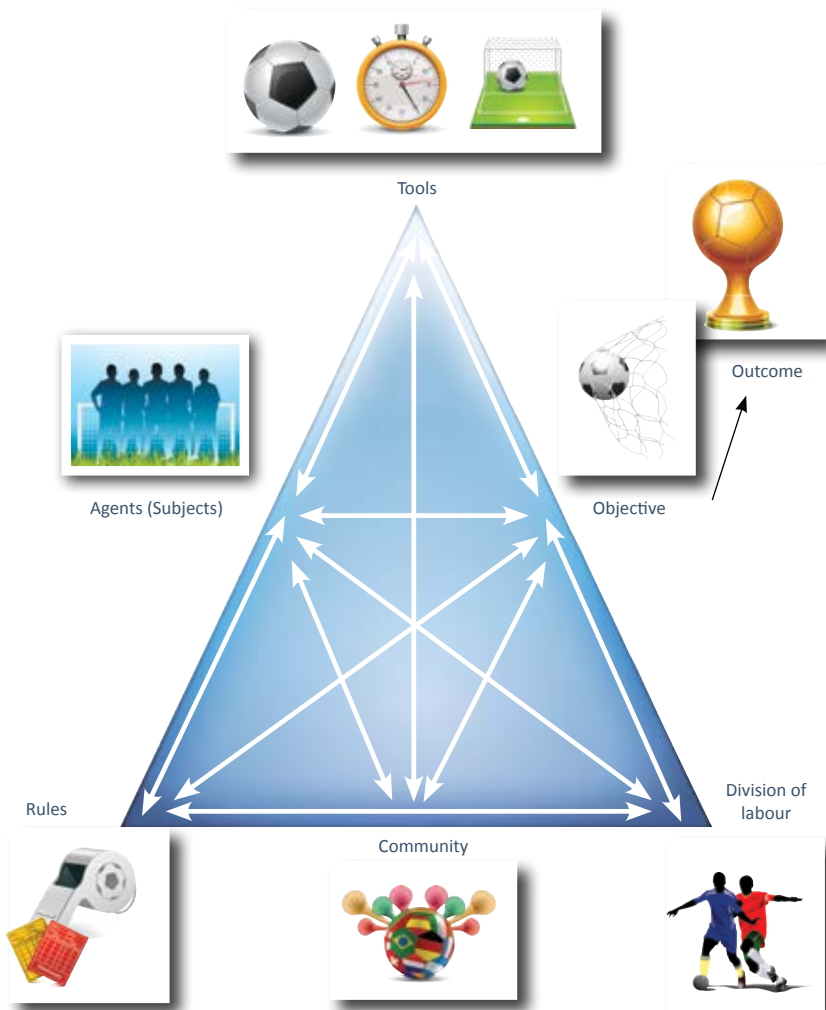**Figure 1: Basic Mediation Triad (Engeström, 1987)**

The use of tools (telephone, language, gestures etc. on the object (communication).

SECOND GENERATION CHAT

Engeström developed Vygotsky's work further, as shown in Figure 2 below. The top triangle is identical to Vygotsky's triangle in Figure 1. Engeström, however added the bottom triangle to include the rules, community and division of labour, socio-historical aspects of mediation that were omitted by Vygotsky.

Figure 2: Second generation CHAT activity system

Tools

Agents (Subjects)

Outcome

Objective

Rules

Community

Division of labour

Element of activity system	Function / relationship with other components
Object	*Physical thing, idea or problem space being worked on. The 'object' is a central organising principle in activity theory*
Subject (s)	*Individual or group of people working on an object towards a common goal*
Outcome	*Desired result of working on an object*
Tools	*Conceptual and material, symbolic, external and internal artefacts for understanding or transforming the object*
Community	*Group of people who share the same object*
Rules	*Explicit and implicit regulations, norms and conventions that constrain or enable actions and interactions within an activity system*
Division of labour	*Horizontal and vertical allocation of responsibilities which mediates relationship between the community and the???????*

In developing his model, which is usually referred to as activity system, Engeström suggested that:

(a) the relations between individuals and the object of their activity are mediated or shaped by tools (concepts and technologies),
(b) the relationships between the community and the overall object of its activity are mediated by its division of labour, and
(c) the relations between individuals and the communities, of which they are part, are mediated by rules and procedures, which can be explicit or implicit.

The importance of second generation CHAT was that it brings interrelations between the individual and his/her community into focus

'Activity' is what happens when human beings operate on their environment in order to satisfy a needs state.

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USING CHAT IN USAID: RESILIM O

Applying second generation CHAT enables us to critically look at each element of the activity system with respect to its object(ive).
Case study: the story of the Blyde Nature Reserve: perceptions of what is driving change

Through our engagements with stakeholders, we have identified a number of drivers that are affecting this reserve. These will influence its ability to cope with change and continue to provide ecosystem and other services. Some of these drivers are human activities or practices.

Illegal collection of plants and illegal fires
There are only 3 field rangers for a reserve of 26 000Ha. Illegal collection of plants is of high concern as it could potentially result in local species extinction. There are also different institutions issuing permits (with little co-ordination between them). Staff shortages mean little enforcement or preventative management is possible. Some parts of the fence are also not complete. The plantation may cause fires on the reserve side to protect their yield.

Illegal dumping
This is a result of a lack of over-arching municipal services, with both domestic waste, and hazardous waste dumped. For example, the local hospital has been implicated in dumping in the area and building rubble is also dumped in areas.

Illegal mining
Persistent, illegal and informal mining for gold is resulting in direct damage to fences, with additional affects like causing fires in winter and creating water pollution through mining activities. Enforcement capabilities are the major constraint, as well as fear and intimidation of field rangers by armed illegal miners, who seemed to be retired formal miners. Field rangers are old and struggle to implement enforcement. The police are involved but not helping.

Livestock encroachment
Illegal fires are created to improve grazing potential for livestock, mainly at Stanley Bush, and trampling by cattle resulting in damages to fauna and flora, e.g. destroying nests of blue swallows. This is exacerbated by the fact that cattle rangers were allocated land by the dept. of Agriculture, creating further institutional tensions. An identified solution would be to improve the fence.

Poor infrastructure for tourism
Infrastructure to cater for the tourist numbers doesn't exist, resulting in peak-season tourism having a negative ecological impact in the area. The little that is vandalised and some theft incidences have been reported. There is no Tourism and Business Development. There is also poor security and tourists have fallen off the cliffs around tourist areas, negatively impacting on the marketing product/image of the reserve. Adequate security and additional signage and safety equipment, all linked to the operational budget, is required.

Operational budget
Lack of Human Resource dispensed budget is fundamentally hampering operational management, affecting and contributing to staff shortages, security and enforcement issues, and poor operational infrastructure. Moreover, it links to dealing with problem animals effectively.

Problem animals
There have been complaints from locals and tourists about baboon hassling and raiding. Also leopards have been reported to kill calves (resulting in community tension and need for compensation). This issue is strongly related to waste management in the baboon's case, there is a need for technology that stops baboons from reaching food sources; also research is required on troop dynamics to control the population and possible problem animals (e.g. City of Cape Town mitigation techniques).

CASE STUDY

Focusing on the Blyde case we can construct an activity system to better understand the issues raised.

Remember second generation CHAT takes object-oriented, artefact-mediated collective activity system as a unit of analysis. An activity system is defined or bounded by the object of the activity. In this case we can take the object or problem space to be managed as the protected area. We can then construct an activity as system as shown in figure 3. A sub-activity triangle analysis can be done as shown in figure 4.

Figure 3: Blyde Nature Reserve Activity System

MEDIATING ARTEFACTS: What are the physical and mental tools in use? Are the tools in use well suited ti the goal(s) of management of protected areas? How have these tools changed over time? In what ways ate the tools in use constraining or influencing the way the work is done? Do subjects have sufficient skills to use the available tools effectively? What other tools can be needed for the work? What knowledge and skills are needed? Are they present? Can they be sourced? From where? How and by whom? How willing ???????????????????

SUBJECTS: Who is involved in management of protected areas? Are they relevant people (qualified, knowledgeable, skilled, informed, focused, etc)? What are the different kinds of people needed for management of protected areas?

OBJECT: What can we observe happening in relation to management of protected areas? How well suited are the actions we can observe to the goals of management of protected areas effectiveness? Is there a misfit? If so, why is it happening? What actions / activities can be (re)focused towards management of protected areas.

OUTCOME: Management of protected areas effectiveness.

RULES: What are the formal and informal (cultural) rules that promote or constrain management of protected areas? To what degree are these explicitly stated? Are there problems with these rules? What are the other structures that shape the way the work is done? What other systems must supply inputs in order for the management of protected areas work to proceed? How are all these systems connected to the management of protected areas? What other implicit (invisible or (un)discussible) events and circumstances shape the management of protected areas. Between whom are they (un)dsicussible? What rules, roles, tools, objects and histories mediate these undiscussibles?

COMMUNITY: Who else is interested / affected by management of protected areas? How can they be brought on board?

DIVISION OF LABOUR: Who does what in the organisation / institution in relation to management of protected areas? Does this matter, or is it merely a sensible division of labour? In what ways does the division of labour constrain or enable management of protected areas effectiveness? Is there any need to share the work? Why and how?
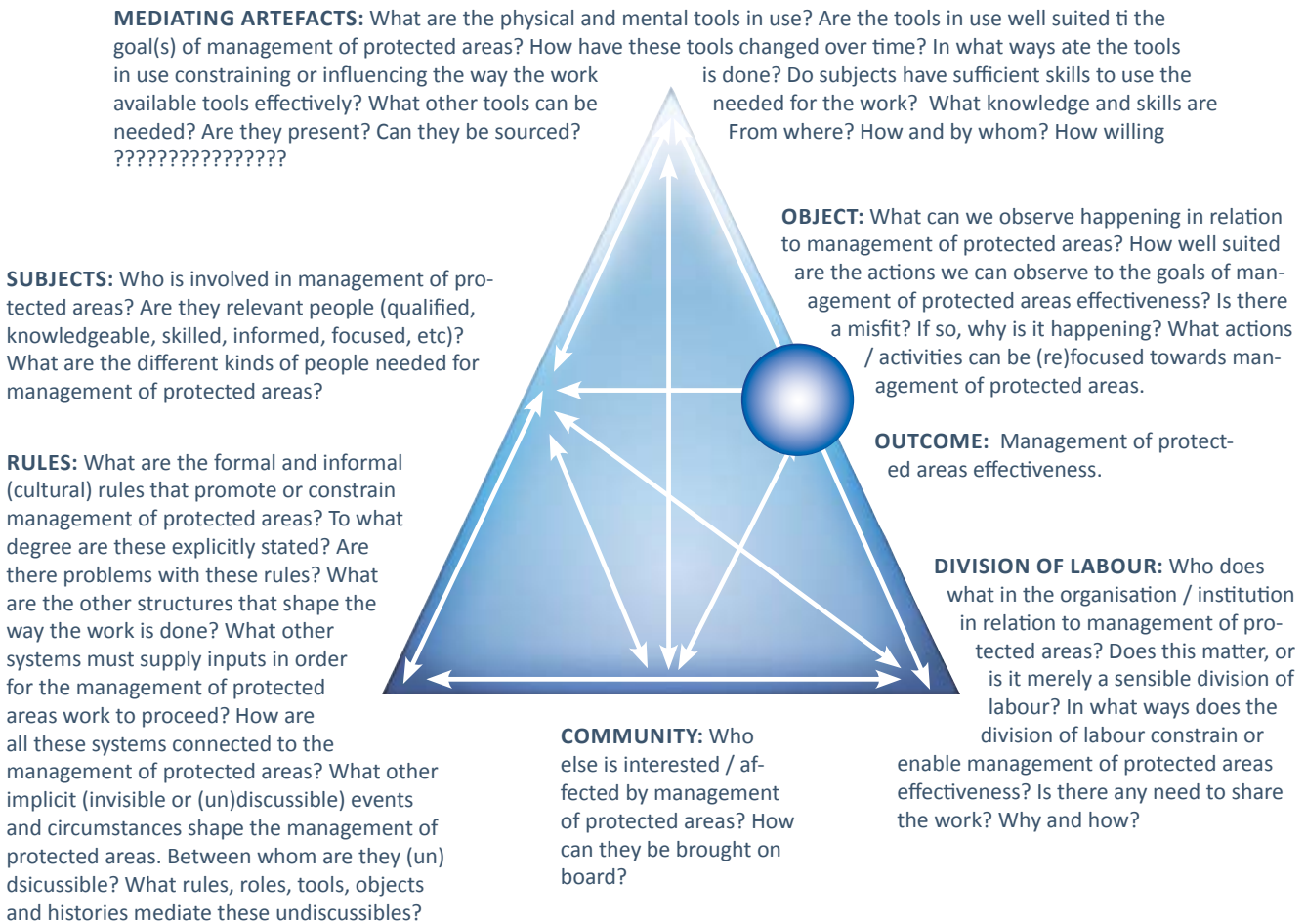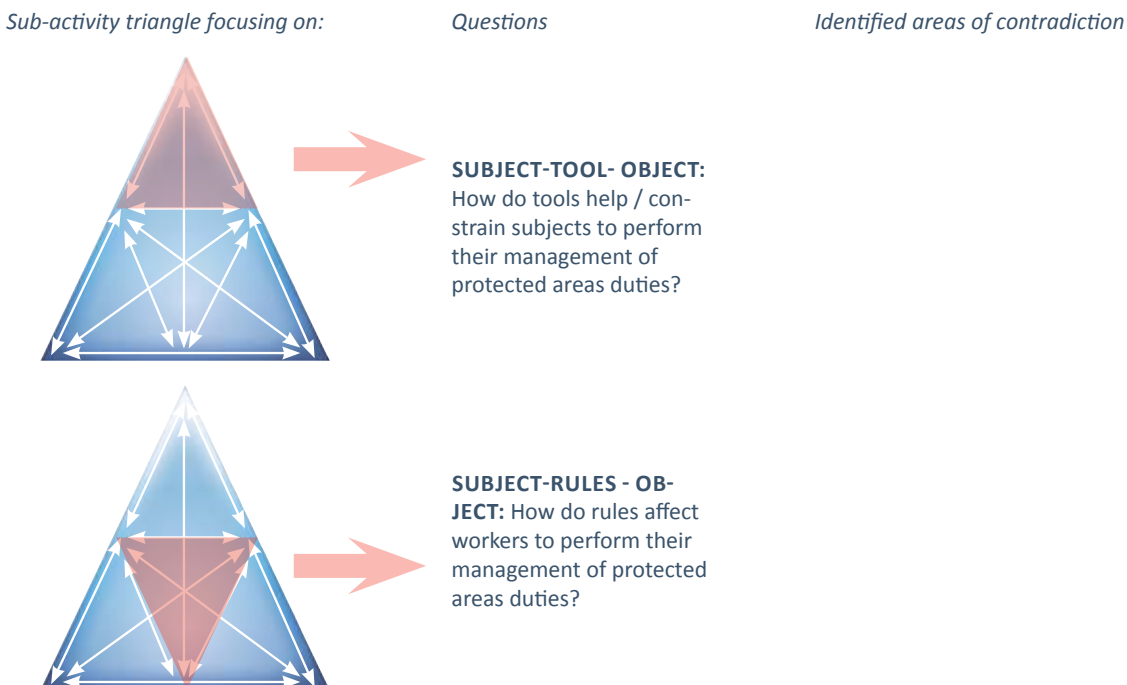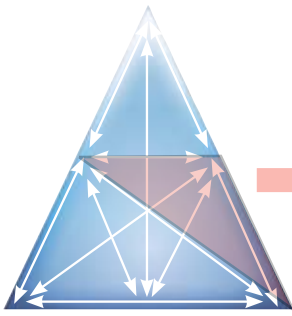
Figure 4: Sub-Activity Triangle Analysis of Contradictions for the Blyde Case Study

Sub-activity triangle focusing on: *Questions*   *Identified areas of contradiction*

SUBJECT-TOOL- OBJECT: How do tools help / constrain subjects to perform their management of protected areas duties?

SUBJECT-RULES - OBJECT: How do rules affect workers to perform their management of protected areas duties?
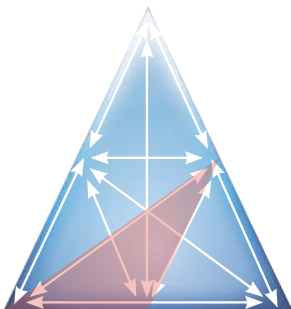
Sub-activity triangle focusing on:	Questions	Identified areas of contradiction
	SUBJECT-DIVISION OF LABOUR - OBJECT: What is the impact of organisational hierarchy on the management of protected areas?	
	COMMUNITY - TOOL - OBJECT: Do the tools (eg. legislations) help / constrain other parties to participate in the management of protected areas duties?	
	COMMUNITY -RULES - OBJECT: How do rules impact on community participation in management of protected areas duties?	

RESEARCH AND FACILITATION TIPS WHEN USING SECOND GENERATION CHAT

For research and facilitation purposes it is helpful to define the unit of analysis in order to understand practice. As mentioned before, second generation CHAT takes the collective activity system as its unit of analysis as shown in figures 2 and also in the Blyde Nature reserve case study above. The activity system is defined by the object or problem space. The object can either be material or symbolic, although it is always both. Emphasis on this dual status of the object is necessary for the following reasons:

- Firstly the materiality of the object is critical in allowing it to become a focus of joint activity, something that can be sensually perceived, handled, and acted on.
- Secondly, it is the symbolic aspect of the object that allows it to participate in our (subjects) progressive attempts to increase our understanding of the phenomenon under investigation.

To achieve an outcome, however, the two modes need to be combined. For us to progressively understand practice, the material mode of understanding should be combined with the symbolic mode, which is imaginary, mental co-construction, meaning making of events and processes as they unfold in our daily work.