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## Livelihoods, livestock and change: the versatility and richness of historical matrices

Karen and Mark Schoonmaker Freudenberger

### • Introduction

One of the greatest dangers in doing rural research is the tendency to take a static view of things and to focus all our research energies on the present, rather than seeing the present as a temporary situation that is a product of the past and a precursor of the future. A number of the RRA tools, such as historical profiles, help to move us beyond this limited view but it is often difficult to connect the discrete benchmarks found in the typical profile with larger trends in people's lives.

We have found that historical matrices are powerful tools that complement and enrich historical profiles. They are effective in facilitating local populations' own analyses of how their situation has changed over time and the causes and consequences of that change.

As the examples that follow will illustrate, historical matrices can illuminate an enormous range of issues. We have found them to be particularly useful for understanding local livelihood strategies and the complex, adaptive portfolios of activities that result from these strategies. Some of our most surprising results have come from what these matrices reveal about the changing role of livestock in the local economy. We were surprised to find that livestock were, in one case, much more important than we had thought since there was little evidence of them in the village (they had been conferred to specialist herders who migrated with them in search of the best grazing areas).

In other cases we have found that livestock is of little importance at the present time but has been much more important at different periods

in the past. This leads to questions of why the changes took place and what may happen in the future which, in turn, often provokes much broader and revealing discussions about environmental or economic changes.

### • Historical matrix: livelihoods

Table 1 is a straightforward livelihood matrix from the village of Gillangel in the Gambia. It shows the relative importance of various activities in the household economy and how these have changed over time. We asked our informants to limit the number of beans to 20 in each square. The number did increase in the last column<sup>1</sup>.

One interesting result from this matrix was that, while the importance of different crops has varied greatly over time as people adjust their strategies to changing conditions (drying up of the swamp where rice had been grown, introduction and then failure of an irrigated rice scheme, etc.), the importance of livestock and tree products remained relatively stable.

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<sup>1</sup> We have found that for historical matrices it is generally easier for people to do the matrix vertically. That is, they put their minds in a certain time period and remember how things were then, before moving on to the next time period. This avoids jumping back and forth in time which can be confusing.

Table 1. Historical matrix: evolution of livelihood strategies (Gillangel, The Gambia)

PERIOD SOURCE OF LIVELIHOOD	Until the end of swamp rice >25 yrs ago	Until the Chinese rice project 15-25 yrs ago	Period of Chinese rice project 12-15 yrs ago	End of rice Project to fertilizer problem 3-12 yrs ago	PRESENT (past 3 years)
Millet	12	19	7	22	30
Groundnut	8	19	5	24	40
Rice	15	6	19	5	10
Maize	8	17	8	20	32
Findoo Grain	4	4	4	4	5
Gardening	14	18	5	20	40
Tree Products	20	20	20	20	45
Cattle	18	20	20	20	20
Sheep and Goats	17	20	20	20	20
Money from Relatives	5	5	10	25	30
Fishing	8	8	10	8	10
Pumpkins	7	7	10	10	20

- **Historical matrix: natural resource use**

Table 2, from the village of Sinthiane in Senegal, focuses on issues of natural resource use. In this case the reduction of livestock, both cattle and sheep and goats, has been dramatic and (as shown in the last column) is expected to decrease even further to the point where no sheep and goats will be kept in the village at all. As we explored the reasons behind this and other patterns observed in the matrix, a fascinating story unfolded.

Traditionally, in the village tenure system after crops were harvested livestock could graze freely on the stubble. This was an important grazing resource for the community. Over the past ten years, in the wake of the Sahelian droughts, some farmers (particularly wealthier male farmers who have the resources to construct wells) have entered into dry season, irrigated gardening and fruit tree orchards. Once a plot is fenced off, animals no longer

have the right to graze and, indeed, it becomes the responsibility of the animals' owners to ensure that their animals do not trespass into the fenced area.

These enclosed gardens and orchards have led to major conflicts between animal owners and gardeners since it has proved to be almost impossible to keep small animals out of the tempting and succulent gardens during the dry season. The gardeners, generally more powerful members of the community, have succeeded in levying heavy fines on owners of errant sheep and goats. These owners are, in many cases, women and the poorer members of the community.

To avoid further conflict there has been a massive disinvestment in ruminants to the point where there are now virtually none left in the village. Using other techniques, we were then able to explore the implications of this on household economies and, particularly, on women's income.

Table 2. Historical matrix: evolution of Resources (Sinthiane, Senegal)

Time Period RESOURCE	BEFORE DROUGHT (s) (>20 yrs ago)	SINCE DROUGHT (s) PRESENT	FUTURE ?
Land under Cultivation	⋮⋮⋮⋮ 20	⋮⋮⋮ 15	⋮⋮ 9
Land in Fallow	⋮⋮⋮ 18	⋮ 2	
Land Loaned	⋮⋮ 10	⋮ 3	• 1
Orchards/ Gardens	• 1	⋮⋮ 5	⋮⋮ 8
Trees	⋮⋮⋮ 18	⋮⋮ 9	⋮⋮ 7
Cattle	⋮⋮⋮ 16	⋮⋮ 7	⋮⋮ 5
Sheep/Goats	⋮⋮⋮ 14	⋮ 3	
Labor Supply	⋮⋮⋮ 15	⋮⋮ 9	⋮⋮ 6

- **Historical matrix: coping strategies in times of crisis**

Table 3, from the village of Ndam Mor Fadamba in Senegal, shows yet another variation on the historical matrix. In this case, the matrix focuses specifically on periods of crisis in the history of the village, as defined by our informants. On the vertical axis our informants brainstormed the many survival strategies used during periods of extreme

hardship. This permitted us to understand better how certain strategies have become more or less important.

Livestock and fowl both showed up as critical survival mechanisms and, in fact, the sale of chickens was the most consistently important survival strategy regardless of the nature of the crisis. This highlighted an aspect of livelihood that is often overlooked.

Table 3. Historical matrix: coping strategies in times of crisis (Ndam Mor Fademba, Senegal)

CRISIS STRATEGY	WW II 39/45	Locust Invasion 1950	Fire in Village 1967	Drought 1973	Rat Invasion 1976	2nd Locust Invasion 1988
Eat Nèow Tree Fruit	•••	••	••	••	••	•
Eat Wild Leaves	•••	•••	•	•	•	
Eat Manioc	••• ••	••• ••				
Eat Dugoor Tree Fruit	••					
Food Aid	••• ••	••	•••	••	••	•
Cultivate + Weave Cotton	•• ••	•••				
Eat Millet Bran	••• ••	•••				
Hunting	••• ••	•••	••		••• ••	
Eat Cowpeas	•••	•••	••	••	••	•••
Dig trenches against locusts	••	•••				
Trade Nèow fruit for millet	••• ••	••• ••	••	••	•	
Sell chickens	••• ••	••• ••	••• ••	••• ••	••• ••	••• ••
Rural → Rural Rural → Urban Migration				••• ••	••• ••	•••
International Migration				••• •••	••• •••	•••• ••••
sell weak animals to buy food for strong			••	•••	•••	•••
Buy flour				••• ••		
cut branches for animal feed				••• ••		
Eat own animals	••• ••			••• ••		

Source: *Fields, Fallow and Flexibility: Natural Resource Management in Ndam Mor Fademba, Senegal*. IIED, London, 1993.

## • Conclusions

These three case studies illustrate the tremendous versatility and richness of historical matrices as tools in Rapid/Participatory Rural Appraisal. They have proved so valuable and have raised so many surprising issues that might otherwise have been overlooked, that we can no longer imagine conducting a village study without doing at least one historical matrix. The key factors to remember when doing these matrices are:

- To explain them systematically;
- To allow your informants to define the time periods that are relevant to them<sup>2</sup>;
- To make sure that, even if some of the variables represent your concerns, there is plenty of opportunity for people to add their own;
- To be certain that everyone has the same interpretation of what the number of beans means (e.g. frequency or importance of the event or activity); and,
- Not to stop when the matrix is filled with beans, but to then go on to launch a discussion about why things happened and what it all means.

Perhaps the best reason for doing historical matrices is that they are invariably fascinating for the local population. As one of our key discussants in Sinthiane said, as he regarded with pride and a certain amount of awe the diagram he and his colleague had just completed:

*“This is just astonishing. We know each of these pieces because they are parts of our existence. But we have never thought of it all put together like this. This is our life and our history”.*

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| <ul style="list-style-type: none"><li>• <b>Karen</b> and <b>Mark Schoonmaker Freudenberger</b>, Land Tenure Centre, University of Wisconsin, 1357 University Avenue, Madison, Wisconsin 53715, USA.</li></ul> |
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<sup>2</sup> Discussions to get at the most meaningful and appropriate time periods can be time consuming but are often a very enlightening part of the exercise.