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Participatory mapping and modelling users' notes

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The purposes of these notes are:

- to outline the main methods, enabling readers to try them for themselves;
- to encourage readers to adapt and develop them and invent new methods; and,
- to let readers know where they can find out more.

Background and uses

Maps and diagrams are an essential part of any planning activity. Maps are especially important in rural development projects where planning, implementation, monitoring or evaluation are required. This is especially the case when the subjects are land use, water sheds, afforestation, agricultural development etc. Increasingly in recent times, village maps showing the layout of the villages the infrastructure and houses etc are being used to map the household statuses of health, wealth, education and other socio- economic conditions.

Rural people are natives of the areas that we are talking about. They have been living in these areas, most times over several generations. They have a great ability to represent their surrounding accurately and diagrammatically - whether they are literate or illiterate. When given an opportunity, they are able to highlight those items that are of importance and interest to them.

In this way:

- 'outsiders' are able to gain much more information about a particular location or situation in a village, the village itself, its resources, its land use pattern, or

watershed situation than they would otherwise;

- outsiders also gain insights into the ways in which rural people think, their priorities, and their reasons for wanting or not wanting, for doing or not doing certain things; and,
- they are also able to locate and pinpoint situations details pertaining to each house such as the presence or absent of any chronic diseases, family planning, number of children, educational status, wealth, land holdings, livestock etc.

Different types of mapping and their uses

As mentioned earlier, there are two major types of maps:

- a village layout map showing houses and village infrastructure
- a village resource map showing the resources of the village such as land, soil types, land use, irrigation etc.

Mapping on the ground

This is simply done by drawing on the ground by hand with a stick, with chalk on concrete, or by using rangoli powder. Mapping on the ground:

- is visible to several people;
- can generate a good deal of discussion;
- can contain a lot of information;
- can be altered or corrected easily;
- can be sequentially developed if required; and,
- can be expanded, as usually the space (ground) is unlimited.

The ground map can either be a plain one or it can be coloured with rangoli or other coloured powders to indicate various subjects such as land use: dryland, irrigated land, forest land, wasteland, housing layout etc.

Mapping on the ground has the disadvantage that it cannot be carried away unless it is copied on paper.

Mapping on paper

Mapping on paper has similar uses as mapping on the ground.

- It has an advantage over mapping on the ground in the sense that it is a record which can be carried away.
- It is also participatory, though not as much as when mapping on the ground (this is mainly because the size of the paper is limited and offers limited space for people to gather around it and participate).
- Another variation in mapping on paper has been the use of coloured paper, cut out in different shapes and stuck on a plain background. This method was used to map the command area of an irrigation tank in Kolar District in Karnataka, and was evolved by a farmer. It showed clearly and accurately the different plots, shapes and sizes according to layouts, ownership and survey number - this tallied with the official map of the area.

It's main disadvantage is its limited size - which does not allow for greater detail or elaboration. Mapping can be done with pencil or by using different coloured pens.

Details such as land use, layout of plots of lands, or houses in the village itself, and problem areas in each can be easily done either on ground or on paper. With village resource maps, comparisons between the past, the present and the future can be mapped. Treatment plans can also be mapped. With village infrastructure maps or social maps, extension of the map to show wealth and household assets such as land and livestock, household problems, economic status, health status, education status and so on is possible by marking on the map itself with various symbols either drawn or placed. Seeds and

different coloured powder can also be used to mark specific houses/situations/problems. In this way selection of beneficiaries for different programmes and monitoring of the impact of programmes on specific families can also be done.

Modelling

This is an advancement over mapping in the sense that it is three dimensional and shows in greater detail the features of an area such as a watershed or a tank and its command.

It has been found to be more participatory even than mapping on ground or on paper, and is a lot of fun for villagers and outsiders alike. Rangoli and other colours form an essential component of this method as do other local materials for making models of houses, people, culverts, bridges, electric lines, vehicles etc.

Modelling has been found to be very useful in land use planning, watershed planning etc. where the problems, treatments, and opportunities can be indicated on the model itself, jointly by the villagers and the outsiders. In modelling, the detail allows for a focused discussion that is easily understood by all. Models can be historical (what did the area look like 50 years ago) or futuristic (what will be area like 20 years hence). Other variations of the theme are if we have one type of treatment. For example, planting eucalyptus, what will it look like in 20 years time, or if we plant a mixed forest, what will it look like in 20 years time? In either case, what will be the benefits/effects?

However, models cannot be carried away and hence would either have to be photographed or copied on slides or paper.

• Some practical applications

As mentioned earlier the mapping exercise is useful in a variety of ways. Their participatory nature makes them an extremely useful tool in understanding the situation that exists in a village or a watershed and leading from here, to planning of development programmes for that village or watershed.

Evolving from plain pictorial representations of village resources and layouts, a lot of 'hybridisations' and extensions have taken place. Some of these are listed below. The list is by no means complete, nor have we reached the limit of what is possible. Much more can be added on in terms of the methodology, content, uses and applications. And anyone can try to do it for themselves.

Situation assessment

Establishing the current status of the village and its resources.

A. Village social mapping (see Figure 1)

This involves asking the villagers to make a map of the current/existing situation prevailing in the village. Starting with a layout of the village, one can then move on to marking out the following:

- Caste distribution and location.
- Population (no. of adults and children male and female, different age groups etc).
- Health mapping: locating houses with persons having chronic ailments, malnourished children, family planning etc.
- Socio-economic Status: indicating distribution of landless or homeless families, small and marginal farmers, other occupations (rural artisans), local resource people, widows, etc. Wealth ranking of the village community can also be done this way.

B. Village/watershed resource mapping (see Figure 2)

Here the villagers are asked to make a map of the village land/watershed. This could be added on to the map of village layout (Social map). In this type of mapping, it is possible to represent the visible and invisible physical features of the village/watershed. These would include vegetation (forests, trees), land use (cultivated, uncultivated waste, grazing land, forest land, irrigated land), land ownership patterns, land productivity, cropping patterns etc.

In a recent exercise the farmers of a watershed did a 'Matrix Ranking'¹ of different types of soil according to various criteria such as type of crop, drainage, yield/productivity, ease of management and land value, and indicated on their map where these different types of soil occurred.

In the case of watershed planning, it has become customary for the different transect² groups to converge on the map/model of the watershed to represent their observations/suggestions regarding indigenous technologies, problems, solutions and opportunities on the map/model in full view of each other and the whole village, thus generating a great deal of healthy discussion, leading to more accurate and refined planning.

This example indicates how various PRA exercises can be linked to one another (sequencing). It is also possible to combine methods in other ways, for example combining the social map with the village resource map ('A' with 'B') would give a more comprehensive picture of the village in its totality. One could then begin to observe how various factors begin to interact such as the trends and the impact of populations on deforestation, land use, land fragmentation, migrations etc, or the land ownership patterns in terms of various economic groups and the type of land they own, eg the relationship between wealth and land productivity.

An inventory of local technology is also an important component to which appropriate new techniques can be added to arrive at a 'basket of choices' from which the community chooses, based on their needs and constraints and capabilities.

¹ Matrix ranking is the subject of another paper, entitled "Quantification, scoring and ranking". PALM series IV G. Available from MYRADA.

² Transects are described in PALM series IV entitled "Transects in PRA". Available from MYRADA.

Figure 1. Social map drawn by villagers of Ramenhally

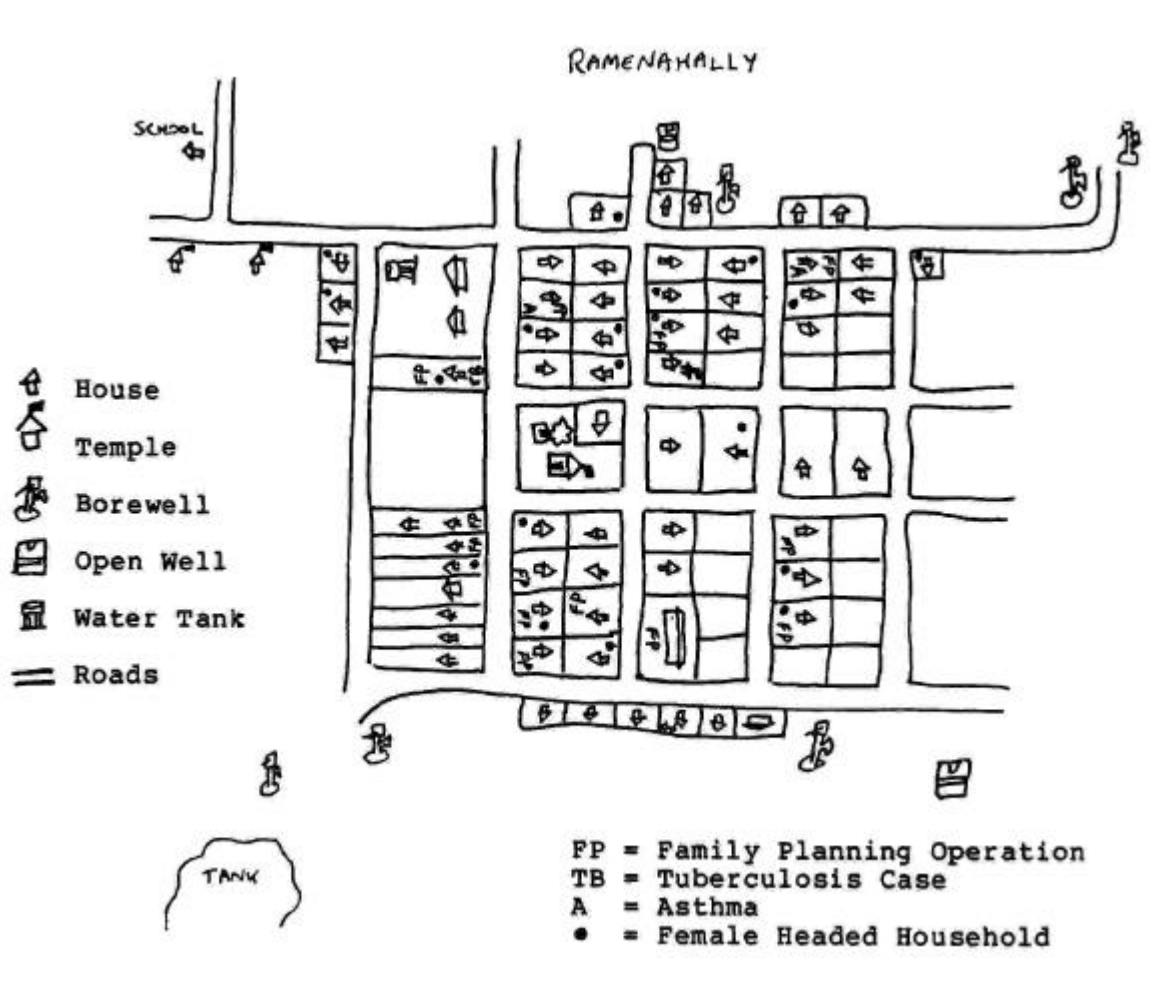
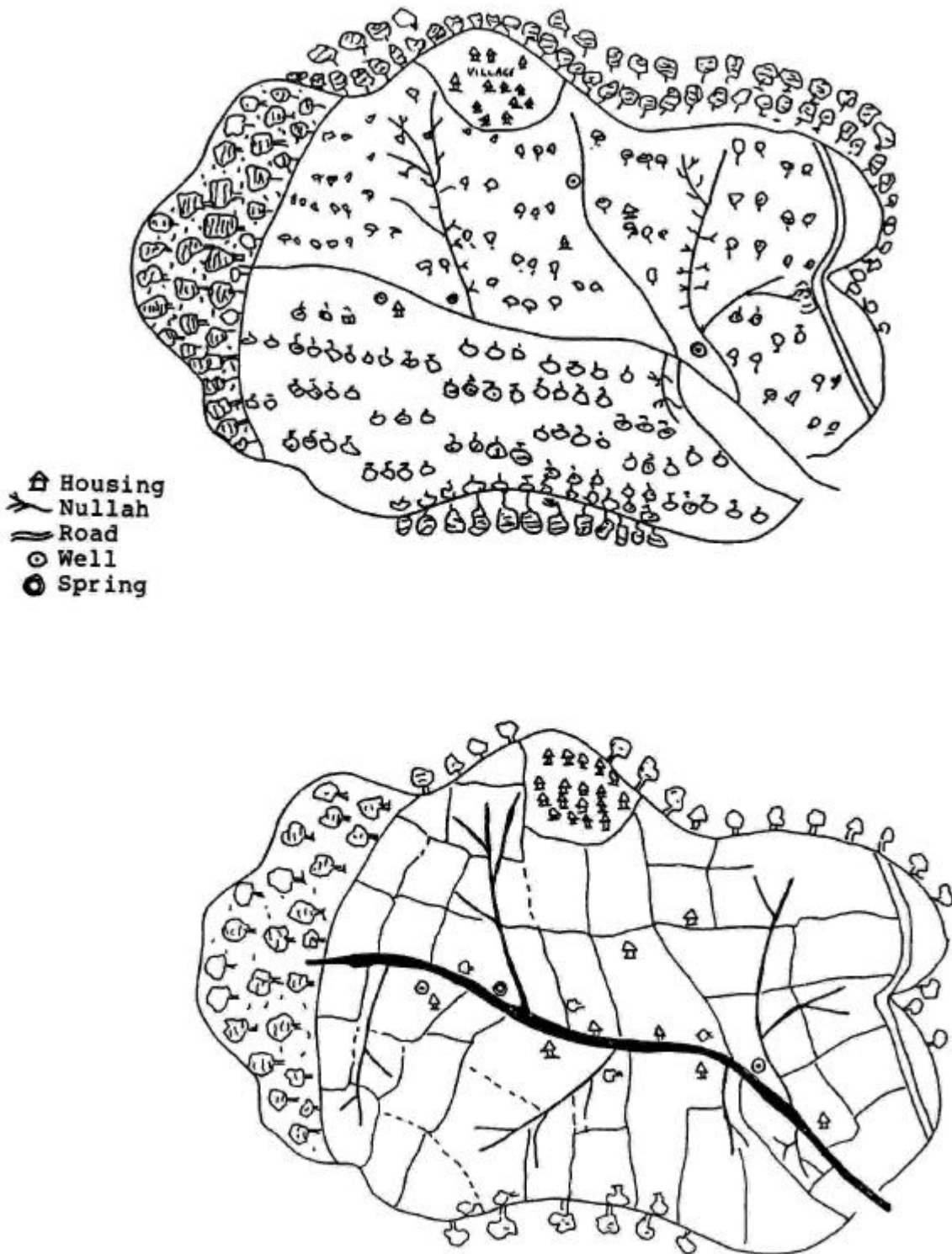


Figure 2. Maps drawn from two watershed models made by people of Ardanaryapura village, Karnatka, India. The top shows the watershed 50 years ago, the bottom as it is today (1990). PRA team from MYRADA, Bangalore



Time series

Representation of either the socio-economic situation of the village community or the village watershed resources (or both) over a period of time can be obtained, and related to each other. This gives extremely interesting historic profiles/transects which help us to know what the situation was like several years ago, how it evolved, and the reasons for this evolution.

Participatory planning village/watershed

This has been tried extremely successfully and is emerging as a very powerful means of participatory planning³ of rural development programmes. Here both villagers and 'Outsiders'/planners can sit together to discuss the village and its resources using the map as the focal point. Treatments can be marked on the map simultaneously. An advanced way of doing this exercise is to allow the villagers themselves to arrive at a development plan of which they then make a presentation to the outsiders/'planners'. This would serve as the basis for discussion and negotiation. The plan however should include the elements of equity and appropriate technology.

Other applications

Variations of this theme are when items are brought by outsiders into the village for discussion. These include aerial photographs or ordinary photographs (taken from a vantage point and giving a good view of the terrain and features), maps and plans of the area/villages. Farmers show a great ability to interpret these documents and discuss them, sometimes even pointing out gaps (for instance, one farmer in Nepal pointed out that the aerial photograph shown to him must have been an old one, as it had only 18 houses in it, whereas the village had 20 houses 2 houses having been constructed recently).

³ This subject 'Participatory planning using PRA methods' is subject of paper PALM series IV H. Available from MYRADA.

Table 1. Users' notes for mapping

Do	Don't
Do spend some time thinking about the exercise - what information do you need, why etc.	
Do select your work group (including village men and women)	
Do select a work spot: someone's house, under a tree, in the open, the village square, a threshing yard, etc.	
In the case of mapping on paper, first draw an outline with pencil before you use coloured felt pens	
Do allow the villagers themselves. to draw the map according to the way that they perceive things and decide among themselves	Don't dominate proceedings
Do facilitate the exercise by asking relevant questions at the right time	Don't interrupt - remember the villagers are concentrating hard
Familiarise yourself with the features on the map by actually verifying features in the village	
Try to add to the map additional information such as households by caste, wealth ranking, assets owned, tree preferences etc.	
Copy ground maps out on paper and make copies of them for documentation and training purposes	

Table 2. Users' notes for modelling

Do	Don't
Do have a fair idea about the terrain and the features of the area that is going to be modelled	Don't take it for granted that the model will appear on its own. The exercise needs to be facilitated
Do spend time thinking about the exercise (HOW you are going to go about it, WHERE you are going to locate it, WHO you wish to involve, WHAT you are going to depict, WHY you need to do the exercise etc?)	Don't overdo the planning part - you might end up doing only planning
Do brief the people well about the exercise and the purpose of it	
DO make the exercise into a game which everyone - the men & women (young & old), the outsiders - enjoys. Allow children to participate	Don't be too strict or rigid in the development of the model - either the place, alignment or colour scheme etc. Let the villagers decide
Do involve the villagers in the selection of the spot. The best places are flat, with a good vantage view of the area being modelled. A fairly open or public place is likely to enhance discussion and participation	
Do have a fair sized model: at least about 5-6 feet in size so that various features can be depicted	Don't make the models too small
Do facilitate the exercise in such a way to promote work participation. Discuss the project with the villagers. Ask them what they think is the best way to proceed. Allow them to construct the model themselves - including details such as nullahs, fields, vegetation, houses, temples	Don't interrupt the flow of once it gets going. Let the people argue among themselves and come to decisions regarding size, colour, shape, location etc.
Do watch how things turn out and take shape. If at the end certain things are left out, ask the villagers 'What about, this... or what about that?'	
Do use locally available materials as much as possible, such as twigs of different species to show vegetation or: - pebbles & stones (to show pavements, stone revetments, nullah training or checkdams, degraded eroded patches) - twigs and twine (to show electric lines, transformers, handpumps etc) - matchboxes for houses - twine for electric lines - grass to show crops. Supplement these with items such as: - rangoli powder** - toys (men, women carts, buildings, bridges) - coloured card (for houses etc) - bits of pipe and so on	Don't overdo the detail. You may neglect the main features. Don't use sophisticated material
Do try to make alternate models of 50 years ago, 20 years hence, models showing proposed treatment plans and so on - using the existing model as a base.	Don't scrap the models. Keep them as long as possible for discussions

* In most cases you may not have to. In one case the children were extremely keen to have their school a respectable size. In another, an elderly woman earned the wrath of the villagers because she threw out a stone that was representing a large rock in the village where the villagers used to sit and chat in the evenings!

**Roughly about 1 kg. of each colour - up to 6 colours - should be adequate. White powder may be required in a larger quantity (say 4-5 kgs) as it can be used to mix with other colours to prepare ash. Chili powder gave us red colour and turmeric powder gave yellow. Blue we obtained from 'Robin Blue', mixing yellow and blue we got green colour. Yellow and red gave us orange. We had our 6 colours. One can try variations of this. Red can also be obtained by crushing bricks. Black from black soil or powdered charcoal, grey or white from 'chunam' or ash. The quantity of coloured material can be increased greatly by using fillers such as sand or sawdust, with which the colours are mixed to increase the bulk. This enhances the quality of the model as the colours then become easy to apply.

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