PARTICIPATORY MIGIS RESEARCH ON POVERTY: USING PLA TO STRENGTHENING THE FARMERS VOICE

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ABSTRACT

This paper will present the main findings of fieldwork carried out in a Hani community Honghe, Yunnan, P.R.China (February - April 1999) in which a handful of computer programs were used in the field to enhance the feedback process and results of a PLA exercise. The package is called MIGIS which stands for Mobile Interactive Geographical Information System. Stated as simply as possible, MIGIS works by transferring graphic information gathered in PLA exercises into computer program format. As quickly as possible this is projected on to a screen in front of the whole community for discussion, correction and critical comment. The PLA exercise is written up during the exercise and the results presented to the community before the MIGIS facilitators depart.

Introduction

The PLA in the title does not refer to the Peoples Liberation Army but to what those people attending the DEVNET Conference know as Participatory Learning and Action. Between February and April 1999 an international team of two Han, three Kiwi and three Hani undertook a joint Mobile, Interactive Geographic Information Systems (MIGIS) feasibility study with the resident farmers of two Hani villages in Luchun County, Honghe Hani Yi Autonomous Prefecture, Yunnan, P.R.China close to the border with Vietnam. The exercise was built on PLA principles and used a conventional range of PRA visual tools.

Although there may be wide agreement that "the use of GIS in a truly participatory context is in its infancy" (*PLA Notes* 34, February 1999, p. 16) the author believes that work in both a technical trial in North Thailand and in the more comprehensive Hani feasibility study reported here that a mobile and interactive form of GIS can be put to work very effectively within the context of a PRA exercise. Used properly GIS can contribute a great deal to the authority and range of the PLA approach without displacing indigenous knowledge.

Goal

Within the context of a stand alone PRA exercise the idea was to demonstrate how a sensitive and flexible approach to the use of GIS can make a useful contribution to the quality and effectiveness of participatory planning. The guiding rule was the simple injunction, *do not allow the technology to lead or adversely interfere with the participatory process.*

Objectives

The feasibility study objectives fell into two mutually supportive streams.

1) To facilitate a participatory planning exercise in the course of which Hani farmers would prepare a:
- review of their resources;
- interpretation of their environment;
- priority list of their problems;
- set of action plans which they could undertake on their own account or if assistance was required what this should be.

2) To test and evaluate the MIGIS approach to see if the MIGIS team could:
- secure and retain farmer interest;
- contribute outside information to the exercise without hijacking the process;
- graphically process information given to the team by the participants with GIS and other programs;

- get farmer participants to check the re-representations for accuracy and whether they could still recognise it as theirs;
- secure the permission of the communities to present the results of the joint study for presentation to outsiders.

Team

The MIGIS team consisted of:

- two experienced Chinese PRA practitioners one a forester and the other a social geographer affiliated with the Social Impact Group of the Yunnan PRA Network:
- two Hani administrators from the Environmental Protection Bureau;
- a Hani researcher and graduate in ethnography working for the Honghe Institute of Minority Studies;
- a Kiwi geographer, geomorphologist and hydrologist who served as the team GIS expert; and,
- two Kiwis with extensive participatory development and research experience in the Asia Pacific Basin, specifically working with minority people in Thailand and Indonesia

What is MIGIS?

MIGIS is an acronym for Mobile, Interactive GIS. It can only work effectively within the context of a competent PRA which relies on community support, skilled, and preferably muted facilitation. It is a pragmatic rather than an ideal approach to PRA which lends itself to situations in which a development agency committed to a specific, high cost intervention such as building a dam, road, irrigation system or the like agreed to at national government level can be encouraged to integrate into their plans what the resident population think[1]. Hard scientific and engineering information can be presented in a manner which is accessible to rural people and GIS can also be used to incorporate entirely local interpretations of the environment. MIGIS is a continuous process that does not require the facilitators to leave the community: as long as appropriate Digital Elevation Model data has been loaded in advance, all results can be produced on site and checked by the participant before the visitors depart. It is an integrative approach to PRA in which the facilitators become partners in a joint reconstruction of landscape in a way that allows as much space for symbolic representation of indigenous knowledge as the scientific analysis of aerial photos or for that matter remote sensing.

On one hand a MIGIS exercise should remain true to PRA in that it should:

- act as a catalyst to stimulate discussion between local participants and bring out the best in indigenous knowledge;
- provide an opportunity to record information collected and presented by the participants and projected on to a big screen where it can be seen by everybody, evaluated and altered by those to whom it belongs;
- be written into a study text which serves to enhance community knowledge and serve as a basis for self initiated development action.

On the other hand this approach enables outsiders to:

- enter into an informed dialogue with farmer participants;
- present scientific and secondary information for consideration by the farmers;
- work towards establishing common ground on which local participants in consultation with government administrators and planners can optimise their understanding of each other and work as a team to plan future work.

What does MIGIS work with?

By adding GIS to the list of available PRA visual tools MIGIS acquires the ability to collect, store, edit, analyse, manipulate, display, and model data relating to the environment.

The following portable equipment was used:

Laptop computer	To configure the images with a minimum of delay. Participants are then less likely to lose interest while waiting for images to come up on screen
Roll-up digitiser	To convert professionally prepared maps, and local farmer –

[1] . I would like to see this made obligatory by all funding agencies. It is possible to share this information with the communities which will be most effected and in principle has as much to do with basic human rights as anything.

	produced maps, to digital form. This made it possible to index and call up other information such as digital photographs and statistics if and as they became relevant to discussion.
Digital camera	To photograph people, places, maps and diagrams prepared by the community. These are entered into the computer and can be called up through the GIS system and projected onto a large screen to stimulate comment and discussion. Video camera work could also be incorporated into the exercise but technological overkill should be avoided
Video projector	To project photographs, graphics and GIS images so that they could be seen by all the participants who are then able to review both their work and that of the visitors, and engage in discussion about it.
Colour printer	To produce high quality copies for reports etc. Photographs were printed to demystify the technology and reciprocate hospitality.
Scanner	To incorporate local icons on the GIS maps and illustrations. A scanner head was attached to the printer.
Generator	To provide a reliable source of power, largely for use to run the video projector during the evenings.
Software	To present information in GIS and graphic form. Many suitable GIS packages are currently available. The MIGIS team used ArcView (version 3.1) with the Spatial Analyst extension and Idrisi (version 2). Macromedia Freehand (version 8) was found to be the best for graphic work. These were displayed using Microsoft PowerPoint (version 5)

Source: Based of notes prepared by Jack McConchie for the project report presented to the NZ Ministry of Foreign Affairs

Site Selection

Entry to the study villages was suggested by Hani employees of the Environmental Protection Bureau on the following criteria that the study site:

- form a natural catchment
- not be readily accessible to a main road
- be representative of Hani communities in Luchun County
- be neither very well off nor very badly off, and
- under consideration for development assistance.

Contact was initiated in the course of a visit by a Han researcher and the Hani Director of the Honghe Institute of Minority Studies. After discussion amongst themselves the people of both villages on Shapu Ridge, working on the clear understanding that the MIGIS team was not a project implementation agency agreed to host a visit.

Shapu Ridge Arena

The team worked simultaneously in two Hani villages, Xiashapu and Shangshapu with a combined population of 318. This divided the task and gave us twice as many people to work with than we had anticipated. This was accepted as being within the range of a normal field contingency and provided an additional challenge.

The farmers of Shapu Ridge rely heavily on their ability to manage irrigated terraces cut into the steep slopes ($21 – 40^{o}$) of surrounding hills (1000m. – 1800m. elevation). There is rarely enough rice to go round and rice yields are supplemented with a range of other grain (buckwheat, corn, wheat) and root crops (sweet potato, yam, taro, cassava). At the time during which fieldwork was undertaken 40% of Xiashapu and Shangshapu householders only had enough grain stored to last five months. Their net income is below the poverty line.

The study found that in their desperation to secure enough food and be in a position to participate in the broadening consumer market farmers were felling forest at a dangerous rate. By opening land on steep slopes close to waterways they were actually placing their water supply and their most productive land, the irrigated terraces at risk. Reports prepared for the farmers using whatever graphic forms could best

make the point served to focus what had at first been a reluctance on their part to face up to what was happening. As the process of discussion and appraisal proceeded they gradually acknowledged what had initially been unacceptable. Amongst other matters their own action plans were aimed at tackling the land and water issues.

Fieldwork

Fieldwork commenced with a week of reconnaissance and settling in to the community. Most of the visitors were billeted in households and the only married couple in the team took over one of the teachers rooms at the school. During the daytime this was turned into an office. To lessen the impact of our presence a lean-to-kitchen was built onto the end of the schoolhouse. The team prepared their own meals mostly with supplies brought in or purchased from local farmers.

During this reconnaissance period the morning was given over to learning about where we were, who we were as a team and who we were working with and how the people of Shapu Ridge chose to represent themselves to strangers. The team walked around the villages and the surrounding landscape for two or three hours a day in a group, met daily to talk about what we had learned, shared comments on our behaviour and collected baseline information in conversation with householders whom we visited, who accompanied us into the fields or whom we ran into while they were working. In the afternoon we split into two groups, usually along gender lines (three of the team were women, five men) and carried out survey work alone or in pairs.

During this period the team collected information for use in the PRA-GIS workshop scheduled for the following week in the nearby town, learned about how to work in the community and what were some of the farmers basic concerns.

PRA

When we returned from the workshop we immediately launched into the PRA exercise. Because so many people were interested in our presence as the first bunch of foreigners they had had anything to do with we asked if we could work with representative teams from each village in which people of different age and gender groups would be included. The idea was to avoid being inundated by more people than we could cope with and ask these representative groups to formulate responses to the different visual tools which could then be presented to the rest of the community for comment and modification.

We started with the social map and wealth ranking of each village. The first session in the school was like most of those which followed. It was held in two crowded classrooms after the evening meal. Apart from the 12 or so people chosen to represent each village there was an equal number of observers and about twice as many children as adults running about and hanging from the windows to see what was going on. The maps drawn were photographed and screened the following night for all to see.

If the first workshop was lively the first evening screening was slightly hysterical. The village presenters and audience entered into the occasion in good humour. If one of the basic rules is for PRA to be fun then the MIGIS version of PRA was definitely an on-going success. However, with so many people participating, discussion was extremely difficult.

It was not until the next day that the serious side of what had taken place was communicated to the visitors. Mill owners did not like their location being advertised, they did not want to find themselves in a position where they might have to pay more tax. There was serious disagreement in Xiashapu about how wealth should be represented: men and women disagreed on what should be shown. Hani culture is ideologically committed to an egalitarian view of things. The argument centred on the issue thus, “Yes, there are differences in wealth between households but this is neither something we feel proud of, nor is it a fixed condition. The shame should not be represented in the absence of our shared familial responsibility to make up for the shortfalls. How can the map acknowledge this reality?” From the very start exercises stimulated discussion which resulted in considerable debate.

Although it was relatively easy with digital photographs to provide opportunities for feedback on farmer prepared images it was not quite so easy to turn around re-representations (maps, diagrams etc.) and fold these back into the on-going community appraisal. There was so much of interest in the field and the visitors had so much to learn that they were reluctant to spend all their time glued to their computers.

Nevertheless, as the exercise proceeded and data collection slowed, processing gradually caught up. By the end of the third week in the second period of fieldwork the MIGIS team was only a week behind. Before the teams departure each village had a chance to view a screening of the overall results.

By this time a fairly comprehensive list of visual tools had been completed.

- Social map for each village (digitised to carry GIS data base);
- Wealth ranking;
- Assessment of food security;
- Historical time line;
- Historical transect;
- Resource map drawn to scale;
- Ranking of crops and livestock;
- Seasonal calendar;
- Record of daily activities;
- Institutional relationships;
- Trend lines;
- Ranking of problems and opportunities;
- Problem tree analysis focused on lack of food;
- Preparation of 10 Action Plans, five for each village.

Did it work?

The people were remarkably enthusiastic and supportive. When fieldwork came to an end the communities had no hesitation in giving the visitors permission to take the results of the study and present these findings to the outside world.

Having everything on computer meant that there was less delay between completing fieldwork and reporting. Before leaving Xiashapu and Shangshapu a copy of the Chinese draft report[2] had been handed to each of the headmen. Within two weeks of leaving the field Environmental Protection Bureau staff at County and Prefectural level as well as senior administrators had seen the same PowerPoint presentation shown to and approved by the people of Xiashapu and Shangshapu for wider dissemination[3]. Within four weeks of leaving the field the 50 page Xiashapu and Shangshapu MIGIS report had been translated into Hani, Chinese and English and copies made available to everybody with an immediate interest in the work.

While in the field the MIGIS team in consultation with farmers was able to work out exactly what land was in danger and what the costs of corrective intervention were likely to be. Social maps draw by farmers were digitised and indexed to other statistical, graphic and pictorial information that could be recalled from ArcView and displayed at the drop of a hat. Farmers drew other maps to scale which enabled the team to carry out an analysis of land use which would otherwise have taken weeks. Land use maps based on earlier studies enabled us to document the transformation of land use. The MIGIS team was of the opinion that the approach had enabled us, the farmers and the visitors:

- to document and articulate the principal land use problems facing the farmers of Xiashapu and Shangshapu;
- to do this in a manner that synthesised scientific and indigenous knowledge; which,
- added considerably to the authority of the PRA report.

The integrity and style of the information provided a very strong case for assistance to support local initiatives which might otherwise have been ignored.

By the end of the study the team was convinced that:

- the integrity of the PRA approach had been maintained;
- the output had been enhanced in a manner that empowered the farmers voice;

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[2] Some 90% of the Hani farmers of Xiashapu and Shangshapu are illiterate. Those who can read and write have been educated in Chinese and are unable to read their own language written in pin-yin Roman script. As much as possible script was avoided and wherever possible indigenous symbols substituted.

[3] The PowerPoint show included a diversion into Arcview so that the team could demonstrate the use made of GIS

- the process of mutual appraisal and sharing of information enabled the participants to integrate indigenous and scientific knowledge to form a very solid platform from which to launch remedial work.

This is not the same as saying that MIGIS is a magic bullet. Far from it. An evaluation visit in June 2000 showed how naïve it would be to make such a claim. Individual representatives of a long established culture of governance and governmentality who are used to assuming a leadership role are the final judges of what is useful and appropriate. It is possible for Action Plans designed by the people for the people of a specific area to be taken up by local officials, extrapolated and used like blue prints to guide development work in a whole district. Top down planning using the results of bottom up planning is just a slightly more advanced way if displacing due process with petty final solutions.

Conclusion

As the technology becomes easier to operate MIGIS work will become increasingly common. Computers and GIS are just another vehicle we can learn to drive and put to work. The challenge of doing so is important. MIGIS is one of the ways in which we as PLA practitioners can bring scientists, engineers and aid bankers out of their corpulent establishments and make them practise the democracy they preach. The feasibility study reported here shows that given proper support, and conducted by experienced people with a clear sense of PLA priorities: GIS can successfully be put to work in participatory planning but it does not reach deeply enough into cultural practises to bring about a revolutionary change.

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