



# Participation and numbers<sup>1</sup>

by **ROBERT CHAMBERS**

Since the early 1990s, a quiet tide of innovation has developed a rich range of participatory ways by which local people can themselves produce numbers. The methodological pioneers have rarely recognised the full significance of what they have been doing. This paper seeks to explore some of the evidence, experience, and questions concerning the generation of numbers using participatory approaches and methods. It is in no way a comprehensive review.

## Ways of generating numbers

Participatory activities can generate numbers in different ways and for different purposes.

First, in a comparative research mode, there is the analysis of secondary data which have been generated in a participatory manner without pre-standardisation. Deciding categories and allocating to them can be difficult but the results can be significant and persuasive. Karen Brock (1999) gathered findings from participatory research on poverty, and analysed what had come from 58 groups and individuals in 12 countries who had been asked to identify key criteria for poverty, ill-being, or vulnerability. She then used a computer

programme (NUDIST) to classify and count these by criteria, separated into urban and rural, and into men and women, and presented the results diagrammatically to show frequency of mention as percentages. One striking finding was that water was a much higher priority for poor people in urban than in rural areas.

In this mode, the numbers are 'ours', that is, they are derived and used by the outside analyst.

Second, in a more empowering mode, participatory monitoring and evaluation (PM & E) (Estrella & Gaventa, 1997; Guijt, 1998, 2000; MaGillivray et al., 1998; Estrella et al., 2000) can generate and use numbers. Local people identify their own indicators and then monitor them. The indicators can be numbers that are counted, qualities that are scored, quantities that are measured or estimated, and so on. To illustrate, in Somaliland, herders evaluated wells by scoring them before and after improvement according to their own 45 criteria (Joseph et al., 1994). There is a large, growing, and relevant literature on PM & E.<sup>2</sup>

In this mode, the numbers are more 'theirs', that is, they belong to and are used by local people.

Third, and the main focus of this note, is the generation of numbers from several or many sources using participatory

<sup>1</sup> Edited extracts from 'Participatory Numbers: experience, questions and the future', which is a revised and updated version of 'The best of both worlds' in R. Kanbur (Ed.) (2003) *Q-Squared: qualitative and quantitative methods of poverty appraisal*, Permanent Black, Delhi, pp.35–45.

<sup>2</sup> For selected abstracts see [www.ids.ac.uk/ids/particip](http://www.ids.ac.uk/ids/particip).

approaches, methods, and behaviours which are to some degree standardised and predetermined. This practice has evolved and spread quietly, almost unnoticed. Often the methods are visual (see e.g. Mukherjee, 1995 and 2001; Jones, 1996; Shah et al., 1999). The activities can be by individuals, but most often they take place in groups: different groups of people do similar things which provide numbers which can be added, averaged, compared, or used as a basis for various calculations. Local people can do calculations themselves at their own level, but it is usually the outside researcher/facilitators who aggregate and calculate beyond the group level.

In this mode, the ownership varies depending on context and facilitation.

### Participatory methods, applications, and activities

**Methods** often used to generate numbers include participatory mapping, modelling, pile sorting, pie diagramming, card writing, marking and sorting, matrix ranking and scoring, linkage diagramming, and pocket voting (for which see van Wijk-Sebesma, 2001). Their common **applications** include social and census mapping, household listing, wellbeing ranking, trend and change analysis, seasonal diagramming, preference ranking, causal-linkage analysis, and problem trees. The participatory **activities** which generate numbers include counting, calculating, measuring, estimating, valuing, ranking, and scoring. Comparing things is often involved, giving numbers or scores to indicate relative sizes or values.

Examples of **counting** are social and census maps. These tend to be very accurate for identifying and listing households, for headcounts and for household characteristics which are common knowledge (for seven cases see Chambers, 1997). Participants can 'see what is being said' and correct and add detail. An illustration is the community censuses with participatory mapping conducted in 54 representative villages in Malawi (Levy & Barahona, forthcoming). Applying strict statistical principles, the findings indicated a rural population of the order of 11.5 million, some 35% higher than the official census figure of 8.5 million.

An example of **calculating** comes from Bangladesh where as part of the appraisal for community-led total sanitation local people work out the quantities (e.g. cartloads for the whole community) of faeces produced in a year (Kar, forthcoming).

Examples of **participatory measuring** can be found with timber stocks, water flows, arm circumferences, and land use areas from participatory GIS modelling (Rambaldi & Callosa-Tarr, 2000).

Examples of **estimating** are often associated with compar-

**'There is a case for methodological pluralism. Some questionnaires will surely always have a value... But with the evidence and experience we now have, should questionnaires be seen as a second best, to be used only if there is no participatory alternative?'**

ing and **relative proportions**, as in historical matrices (e.g. Freudenberger, 1995; PRAXIS, 2001) which indicate trends and changes; seasonal food calendars which show seasonal variations in things like amount and type of food consumed (e.g. Mukherjee & Jena, 2001) and health problems (Shah, 1999); and as in proportional piling for income and food sources (e.g. Watson, 1994; Eldridge, 2001a; and Stephen Devereux & Henry Lucas, pers. comms). There are many applications with variants of methods such as the Ten Seed Technique (Jayakaran, 2002) or the allocation of 100 seeds, stones, or other counters to give percentages.

Examples of **valuing** are preference ranking, matrix ranking and matrix scoring (Jones, 1995). Things compared range from crop varieties in Zambia (Drinkwater, 1993) and India (Manoharan et al., 1993) to contraceptive methods, from markets in Bangladesh (Kar & Datta, 1998) to political parties, from girls' preferences for sex-partners in Zambia (Shah, 1999) to wild plants collected for winter feeding of goats in Afghanistan (Leyland, 1994). Examples in the UK include health providers and candidates interviewed for a university post.

**Comparing** which combines **estimating** and **valuing** is also common. Perhaps the best known and most widespread example is wealth or wellbeing ranking, where analysts group households according to their judgements of personal or household conditions (see e.g. *RRA Notes* 15, 1992 for an introduction).

### Going to scale

Local people can generate numbers in all the above ways. In practice, this is usually with facilitation of individuals, or more usually groups, by one or more outsiders. Local people can also themselves be facilitators, but outsiders' skills are usually needed where participatory activities occur on a scale which requires later aggregation, with or without statistical analysis. In these situations, some degree of standardisation of process is common to assure comparability and enhance the validity of aggregation. The outcomes are often presented in

tables no different from those generated by questionnaire surveys. There are now numerous examples. A few illustrations can indicate the sort of thing that has been done and point to future potential.

- A pioneering effort in Kenya used wealth ranking to enable pastoralists to separate out three groups – rich, middle, and poor. A ranking game was then played for the relative importance of problems, and the results averaged for 24 rich, 17 middle and 27 poor groups. There were sharp differences between the groups in the priorities they identified. Livestock management scored 87 for the rich, for example, but only 7 for the poor (Swift & Umar, 1991).
- The earliest case of a large-scale survey with participatory visual analysis and no questionnaire may<sup>3</sup> have been the 1992 use by ActionAid of PRA-related methods, mainly mapping, classifying and, counting, in over 130 villages in Nepal (ActionAid-Nepal, 1992). This was a survey of utilisation of services. It covered the whole population in the villages and generated 13 tables. The population summed to 35,414.
- An SCF (UK) study in 20 Districts in Malawi, Zambia, and Zimbabwe used pile sorting and other participatory methods for a retrospective study on how individual poor farmers coped with the 1992 drought (Eldridge, 1995, 1998 & 2001). The resulting tables were similar to those from a questionnaire survey.
- Aggregating from focus groups has been a feature of some Participatory Poverty Assessments, for example, the Kenya and Tanzania PPAs led by Deepa Narayan in the mid-1990s and the Bangladesh PPA (UNDP, 1996) where poor women's and poor men's priorities were elicited separately.
- Focus groups have undertaken participatory studies of urban violence in Jamaica, Guatemala, and Colombia with identification of different types of violence, their seriousness, and the importance, positive or negative, of different institutions (Moser & Holland, 1997; Moser & McIlwaine, 2000a; Moser & McIlwaine, 2000b; and Moser, 2003). In the Guatemala study this led, for example, to a table derived from 176 focus group listings which showed the frequency of mention of 22 different strategies for coping with violence (Moser & McIlwaine, 2000b)
- Aggregation from focus groups was also undertaken in the Voices of the Poor study (Narayan et al., 2000) in 23 countries. This involved aggregating the views of hundreds<sup>4</sup> of discussion groups in over 200 communities

<sup>3</sup> I shall be grateful to anyone who can tell me of any earlier case.

<sup>4</sup> A precise figure cannot be given for two reasons: the total number of discussion groups was not recorded for every country though it was probably over 1,500 (Narayan et al., 2000.); and not all discussion groups produced relevant comparable data suitable for analysis.

on directions of change in violence against women and of characteristics of institutions, the results of which were then presented diagrammatically.

- A participatory study was undertaken in Malawi of the 'starter pack' (of seeds, fertiliser etc) programme and of small farmers' ideas of sustainability (Cromwell et al., 2001). In each of 30 villages, analysis by three focus groups, each of a different category of farmer, included pairwise ranking of the relative importance of 15 indicators of sustainability. The results were combined in a table of mean values across villages by region.
- Also in Malawi, policy-related research using participatory methods and following statistical principles has been used to investigate questions considered too complex for questionnaires, such as the proportion and distribution of the very food insecure and the proportions who should be targeted by an intervention (Levy & Barahona, forthcoming, and Levy, this issue)

### Methodological and research issues

In these approaches, process is sensitive to quality of facilitation. Good selection, training, and commitment of facilitators are vital, as are adequate time and resources devoted to training. Group characteristics and dynamics are another key area. Groups may be unrepresentative, or dominated by one or a few, or by one sort of person (for example, men in a mixed group of men and women). Care in selection, in judging size of group, and observation and facilitation of process can offset these dangers.

Some methodological questions concern applying statistical principles<sup>5</sup>. Others concern optimising trade-offs, for example:

- **Closed and commensurable versus open and diverse:** trade-offs between the rigidity of preset categories and the diversity of categories likely to result from open-ended participatory processes. David Booth has expressed concern that the exploratory, responsive, and reflexive nature of enquiries will be sacrificed through standardisation to permit aggregation upwards (Booth, 2003). The issue is serious and likely to be a perennial. To date, a partial solution has been progressive participatory piloting and evolution towards degrees of standardisation as in the Malawi starter pack study (Cromwell et al., 2001).
- **Standardised versus empowering.** The more standardised the process, the more extractive and less empowering and

<sup>5</sup> For a clear and authoritative statement of the application of statistical principles to these processes, see Levy & Barahona, forthcoming.

accommodating of local priorities and realities it is likely to be. The less standardised it is, the harder the outcomes will be to analyse.

- **Scale, quality, time, resources, and ethics:** The issues here are far from simple. Smaller scale, more time, and more resources can allow for higher quality and better ethics but losing on representativeness; and vice versa.

For research, there are many questions. Three which stand out are:

- **Relative costs:** assessments of relative costs of participatory approaches and questionnaires have tended to show that the participatory approaches are cheaper, but an up-to-date collation and analysis of evidence is needed.
- **Relative benefits:** assessments of validity, relevance, and utility comparing participatory approaches with questionnaires.
- **Comparative analysis:** comparing approaches, methods, and outcomes to learn about and be able to spread good practice.

## Potentials

Two potentials deserve special note.

### Alternatives to questionnaires.

The numbers generated are similar to those from questionnaires, but with advantages including better access to insights on topics which are sensitive, complex or unexpected, often greater accuracy and relevance, and the potential for 'the best of both worlds', namely qualitative as well as, or combined with, quantitative insights. To illustrate, a participatory study in India gave the caste-wise breakdown of number of families with addiction to alcohol (PRAXIS, 2001). Moser and McIlwaine's work in nine urban communities in Colombia elicited numerous types of violence, and (2000a) produced the unexpected finding that 54% of the types of violence identified were economic, as against only 14% political, contrary to the common belief that political violence was the bigger problem (Moser, 2003).

There is a case for methodological pluralism. Some questionnaires will surely always have a value, done well in some contexts (for example, perhaps, the National Sample Survey in India). But with the evidence and experience we now have, should questionnaires be seen as a second best, to be used only if there is no participatory alternative? There is a reversal here of mental set and reflex, with participatory approaches, methods, and behaviours replacing questionnaires as the first option considered when numbers are needed.

## 'Participatory numbers may be needed by outsiders, but gains by participants may be less improbable and difficult than appears at first. The insights and numbers can often be of interest and use to community members'

### Empowerment

Participatory numbers can empower. The questions:

*Whose research is it, and for whom?*

*Whose monitoring and evaluation?*

*Whose indicators and numbers?*

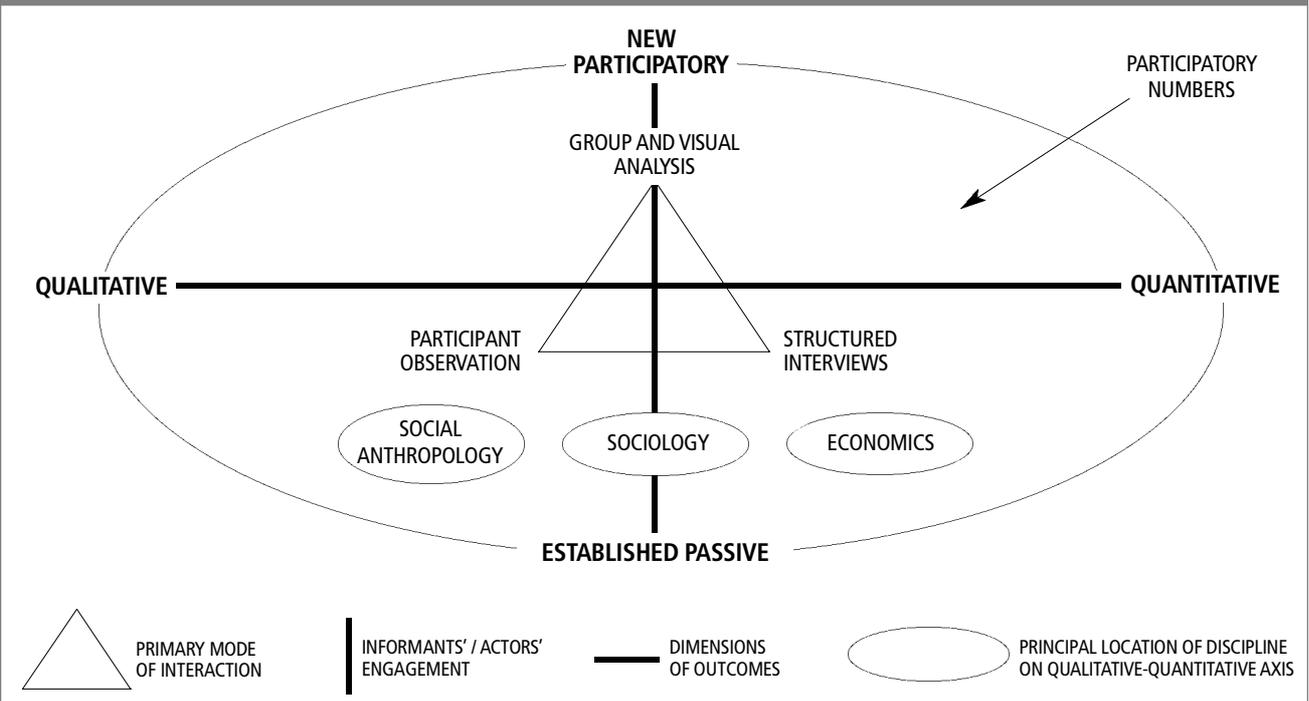
*Analysed and used by whom?*

*Who is empowered?*

can be asked of every process, and again and again. Participatory numbers may be needed by outsiders, but gains by participants may be less improbable and difficult than appears at first. The insights and numbers can often be of interest and use to community members. To an extent easily overlooked, people enjoy and learn from the processes of analysis and sharing of knowledge, values, and priorities, and feel good at discovering what they can show and express, and having their views heard. A typical observation is that, 'People participating in the groups seemed to enjoy the discussions and exercises and most stayed for the entire duration' (Adato & Nyasimi, 2002). In good PRA practice there is a tradition that the data – the maps, matrices and diagrams – should be retained by those who created them. There is no a priori reason why data from participatory numbers activities should not be shared. Efforts can be made throughout the piloting and design of the process to make the data of mutual benefit, and able to lead to and support local action.

Participatory numbers can also support decentralised and democratic governance. Examples from the Philippines stand out (Nierras, 2002). There, grassroots health workers have made their own classifications and disease maps, conducted their own analyses, and produced village figures at variance with official statistics, but which officials came to accept. Moreover, they identified priority actions which led in a matter of months to a sharp decrease in mortality. Or again, participatory investigation of land holdings in the Philippines led to revisions of figures which doubled local government takings from the land tax which was the principal source of

Figure 1: Dimensions of interaction and outcome



revenue. These compelling examples open one's eyes to what appears to be a widespread potential.

**Spread, good practice, and ethics**

Despite much remarkable innovation, the potential of participatory approaches, methods, and behaviours has been little recognised by mainstream professionals. Several explanations can be suggested: innovators in NGOs have lacked time or interest to write up; questionnaires are embedded professionally and institutionally as the way to generate numbers in research; rather few academics or other researchers have been interested in new approaches in research; and participatory approaches are regarded as qualitative not quantitative, as in the north-west quadrant of Figure 1. But all this is changing as the potential of the north-east quadrant is recognised. The question now is how with spread to establish good practices, both methodologically and ethically.

Conditions are like the early days of RRA in the late 1970s (Khon Kaen, 1987), and PRA in the late 1980s and early 1990s, when it was becoming clear that something was about to happen on a wide scale. Both RRA and PRA challenged and presented alternatives to professionally embedded methodologies. With both there was some excellent and inspiring good practice as they spread. But

there are dire warnings from both. With rapid spread and heavy demand, many who claimed to be RRA or PRA trainers and practitioners had top-down attitudes and behaviour, and lacked practical experience. Much practice was bad – imposing, routinised, insensitive, unimaginative, exploitative, and unethical. People were alienated, and the data were unusable and unused.

Two differences from RRA and PRA do, however, give grounds for hope.

- The first is the serious professional and academic interest in qualitative-quantitative issues and going to scale, including the application of group-visual methods. This is evident in recent publications such as *Participation and Combined Methods in African Poverty Assessment: renewing the agenda* (Booth et al., 1998), publications of the Statistical Services Centre at Reading University, the Cornell March 2001 Qualitative-Quantitative Workshop (Kanbur, 2003), and the Swansea July 2002 Conference on Qualitative and Quantitative Methods in Development Research. Starting in 2002, the International and Rural Development Department and the Statistical Services Centre at the University of Reading have convened workshops for PRA/PLA practitioners on 'Dealing with data from participatory studies: bridging the gap between qualitative and quantitative methods', combining statistical professionalism with

participatory practice and ethics.

- The second difference is that the application of participatory numbers approaches requires more serious preparation than PRA. Almost anyone can do almost anything participatory and call it PRA. To generate numbers, however, requires more thought, preparation, pilot testing, and discipline.

For the future, different observers will have different prescriptions. Good ideas can be found in statements from workshops in Sussex in 1994 (Absalom et al., 1995), Bangalore in 1996 (Kumar, 1996) and Calcutta in 1997 (all three published in PRAXIS, 1997). Box 1 shows a personal short list for good professional practice in this new context:

A code of good practice for participatory numbers facilitators, users, and sponsors has been evolved by members of an informal network and is (July 03) in near final draft.<sup>6</sup> The bottom line is that when numbers are generated in participatory ways, ethical considerations have to come first.

<sup>6</sup> The draft Code of Conduct is being finalised by Jeremy Holland j.d.holland@swansea.ac.uk who is also, together with Savitri Abeyasekera, editing a book provisionally entitled *Who Counts?* on participatory numbers.

#### Box 1: Participatory numbers: good professional practice

- Donors, governments, and international NGOs to exercise restraint and patience and not to demand too much, too fast, and with too few resources.
- Approaches and methods to be invented and evolved by sensitive and experienced innovators to fit each case, recognising the need for time and resources for the critical phase of methodological development.
- Care to be taken in the selection and training of field facilitators, recognising that training takes time (weeks not days), will be a substantial proportion of expenditure, and will bring long-term as well as immediate benefits through capacity building.
- Monitoring, evaluation, and feedback to be facilitated and sought from community participants and combined with practitioners' self-critical reflection, to learn each time how to do better, and the insights shared widely.
- Above all, ethical practice to be demanded and held to. This means not misleading, exploiting, or endangering people. So often local people's time is taken to their loss not gain, their expectations are raised and disappointed, and they are exposed or expose themselves to danger without protection or disadvantage without recompense. Honest transparency about purpose and about what people can and cannot expect are paramount. To the extent feasible, the process should be empowering, a good experience, and a net gain for them.

#### CONTACT DETAILS

Robert Chambers  
Participation Group, Institute of Development Studies, University of Sussex, Falmer, BN1 9RE, UK

#### ACKNOWLEDGEMENTS

For comments I am grateful to participants in the March 2001 Cornell workshop on Qualitative and Quantitative Poverty Appraisal: Complementarities, Tensions, and the Way Forward; the July 2002 Swansea conference on Combining Qualitative and Quantitative Methods in Development Research; and Christine van Wijk. This paper also owes a lot to discussions of the informal 'Parti Numbers' group which has met in the UK at the Centre for Development Studies, Swansea, the Centre for Statistical Services, Reading, the Institute of Development Studies, Sussex, the International HIV/AIDS Alliance, Brighton and the Overseas Development Institute, London.

#### REFERENCES AND RESOURCES

Sources on participatory numbers and statistics can be found at the website of the Statistical Services Centre, Reading University [www.reading.ac.uk/ssc/](http://www.reading.ac.uk/ssc/)

Absalom, E. et al., (1995) 'Participatory methods and approaches: sharing our concerns and looking to the future', *PLA Notes*

22: 5-10.

ActionAid-Nepal (1992) *Participatory Rural Appraisal Utilisation Survey Report Part 1: Rural Development Area Sindhupalchowk*, Kathmandu: Monitoring and Evaluation Unit, ActionAid-Nepal, P.O.Box 3192, Kathmandu.  
Adato, M. & Nyasimi, M. (2002) 'Combining qualitative and quantitative techniques in PRA to evaluate agroforestry dissemination practices in Western Kenya', draft. Washington DC: International Food Policy Research Institute.  
Booth, D., Holland, J., Hentschel, J., Lanjouw, P. & Herbert, A. (1998) *Participation and Combined Methods in African Poverty Assessment: renewing the agenda*. Report commissioned by DFID for the Working Group on Social Policy, Special Program of Assistance for Africa.

Booth, D. (2003) 'Towards a better combination of the quantitative and the qualitative: some design issues from Pakistan's Participatory Poverty Assessment', in R. Kanbur (Ed.) *Q-Squared*, pp 97-102.

Brock, K. (1999) (unpublished) Analysis of Consultations with the Poor wellbeing ranking and causal diagramming data. Brighton: Participation Group, Institute of Development Studies, University of Sussex.

Chambers, R. (1997) *Whose Reality Counts? Putting the first last*. London: Intermediate Technology Publications.

Cromwell, E., Kambewa, P., Mwanza, R. & Chirwa, R. with KWERI Development Centre (2001) *Impact Assessment Using Participatory Approaches: 'Starter Pack' and Sustainable Agriculture in Malawi*, Network Paper No 112, Agricultural Research and Extension Network, Overseas Development Institute.

Drinkwater, Michael (1993) 'Sorting Fact from Opinion: the use of a direct matrix to evaluate finger millet varieties', *RRA Notes* 17: 24-8.

Eldridge, C. (1995) Methodological notes, instructions to facilitators, household responses to drought study in Malawi, Zambia, and Zimbabwe. UK: Save the Children.

Eldridge, C. (1998) Summary of the Main Findings of a PRA Study on the 1992 Drought in Zimbabwe. UK: Save the Children.

Eldridge, C. (2001) *Investigating Change and Relationships in the Livelihoods of the Poor Using an Adaptation of Proportional Piling*. UK: Save the Children.

Estrella, M. & Gaventa, J. (1997) *Who Counts Reality? Participatory monitoring and evaluation: a literature review*. Brighton: Participation Group, IDS, University of Sussex.

Estrella, M. with Blauert, J., Campilan, D., Gaventa, J., Gonsalves, J., Guijt, I., Johnson, D. & Ricafort, R. (Eds) (2000) *Learning from Change: issues and experiences in participatory monitoring and evaluation*. London: Intermediate Technology Publications.

Freudenberger, K. (1995) 'The historical matrix

- breaking away from static analysis', *Forests, Trees and People Newsletter*, 26/27:78–79
- Guijt, I. (1998) *Participatory Monitoring and Impact: assessment of sustainable agricultural initiatives: an introduction to the key elements*, SARL Discussion Paper no 1, IIED Sustainable Agriculture and Rural Livelihoods Programme.
- Guijt, Irene (2000) 'Methodological issues in participatory monitoring and evaluation'. In Estrella with others (Eds) *Learning from Change* pp 201–216.
- Jayakaran, R. (2002) *The Ten Seed Technique*, World Vision, China. ravi\_jayakaran@wvi.org
- Jones, C. (1996) Matrices, ranking and scoring: participatory appraisal 'methods' paper, Participation Group, IDS, University of Sussex
- Joseph, S. & 31 others (1994), Programme review/evaluation, October.
- ActionAid Somaliland c/o ActionAid, Hamlyn House, London N195PG
- Kanbur, R. (Ed.) (2003) *Q-Squared: qualitative and quantitative methods of poverty appraisal*. Permanent Black, D-28 Oxford Apartments, 11, I.P. Extension, Delhi 110092
- Kar, K. (forthcoming) *Subsidy or Self-respect: community-based total sanitation*, IDS Working Paper, IDS, Sussex.
- Kar, K. & Datta, D. (1998) 'Understanding market mobility: perceptions of smallholder farmers in Bangladesh' *PLA Notes* 33 54–58.
- Khon Kaen (1987) *Proceedings of the 1985 International Conference on Rapid Rural Appraisal*, University of Khon Kaen, Thailand.
- Kumar, S. (Ed) (1996) *ABC of PRA: Attitude Behaviour Change*, A Report on South-South Workshop on PRA: Attitudes and Behaviour organised by ACTIONAID India and SPEECH, available from PRAXIS, 12 Patliputra Colony, Patna 800013 Bihar
- Levy, S. & Barahona, C. (forthcoming) *How to generate statistics and influence policy using participatory methods*, draft Working Paper, IDS Sussex, June
- Leyland, T. (1994) 'Planning a Community Animal Health Care Programme in Afghanistan', *RRA Notes* 20: 48–50.
- MacGillivray, A., Weston, C. & Unsworth, C. (1998) *Communities Count! a step by step guide to community sustainability indicators*. London: New Economics Foundation.
- Manoharan, M., Velayudham, K. & Shunmugavalli, N. (1993) 'PRA: an approach to find felt needs of crop varieties', *RRA Notes* 18: 66–8.
- Moser, C. (2003) 'Apt illustration' or 'anecdotal information'? Can qualitative data be representative or robust?'. In Kanbur (Ed.) *Q-Squared*
- Moser, C. & Holland, J. (1997) *Urban Poverty and Violence in Jamaica*, World Bank Latin American and Caribbean Studies Viewpoints. Washington DC: World Bank.
- Moser, C. & McIlwaine, C. (2000a) *Urban Poor Perceptions of Violence and Exclusion in Colombia*, Latin American and Caribbean Region, Environmentally and Socially Sustainable Development Sector Management Unit. Washington DC: World Bank.
- Moser, C. & McIlwaine, C. (2000b) *Violence in a Post-Conflict World: Urban Poor Perceptions from Guatemala*, Latin America and Caribbean Region, Environmentally and Socially Sustainable Development Sector Management Unit. Washington DC: World Bank.
- Mukherjee, N. (1995) *Participatory Rural Appraisal and Questionnaire Survey: Comparative Field Experience and Methodological Innovations*, New Delhi: Concept Publishing Company, A/15-16, Commercial Block, Mohan Garden, New Delhi 110059.
- Mukherjee, N. (2001) *Participatory Learning and Action – with 100 field methods*. New Delhi: Concept Publishing Company, A/15-16, Commercial Block, Mohan Garden New Delhi 110059.
- Mukherjee, Neela and Bratindi Jena (Eds) (2001) *Learning to Share: Experiences and Reflections on PRA and Other Participatory Approaches, Volume 2*, Concept Publishing Company, A/15-16, Commercial Block, Mohan Garden, New Delhi 110059
- Narayan, D., Chambers, R. Shah, M. Kaul & Petesch, P. (2000) *Voices of the Poor: crying out for change*. Oxford: Oxford University Press for the World Bank.
- Nierras, R. (2002) Generating Numbers with Local Governments in the Philippines, Working Draft, IDS, Sussex.
- PRAXIS (1997) *PRA Reflections from the Field and Practitioners*, Institute for Participatory Practices, 12 Pataliputra Colony, Patna 800 013, India (also available from Participation Group, IDS, University of Sussex, Brighton BN1 9RRE, UK).
- PRAXIS (2001) *The Politics of Poverty: a tale of the living dead in Bolangir*, Books for Change, SKIP House, 25/1 Museum Road, Bangalore 560 025.
- Rambaldi, G. & Callosa-Tarr, J. (2000) *Manual on Participatory 3-Dimensional Modeling for Natural Resource Management*, Essentials of Protected Area Management in the Philippines, Vol 7, NIPAP, PAWB-DENR, Philippines [available from Protected Areas and Wildlife Bureau, DENR Compound, Visayas Avenue, Diliman, 1101 Quezon City, Philippines].
- RRA Notes* 15 (1992) Special Issue on Applications of Wealth Ranking, London: International Institute for Environment and Development.
- Shah, M. Kaul (1999) 'A Step-by step guide to popular PLA tools and techniques'. Chapter 2 in M. Kaul Shah, S. Degnan Kambou & Monahan, B. (Eds) *Embracing Participation in Development: worldwide experience from CARE's reproductive health programs*. USA: CARE, 151 Ellis Street, Atlanta, Georgia 30303.
- Swift, J. & Umar, A. Noor (1991) *Participatory Pastoral Development in Isiolo District*. Socio-economic research in the Isiolo Livestock Development Project, Final Report, EMI ASAL Programme, Kenya.
- UNDP, Bangladesh (1996) *UNDP's 1996 Report on Human Development in Bangladesh, Volume 3 Poor people's perspectives*. Dhaka: UNDP.
- Van Wijk-Sijbesma, C. (2001) *The Best of Two Worlds? Methodology for participatory assessment of community water services*, Technical paper series no. 38. Delft, The Netherlands: IRC International Water and Sanitation Centre and Washington DC: World Bank Water and Sanitation Program.
- Watson, K. (1994) 'Proportional piling in Turkana: a case study', *RRA Notes* 20: 131–132.