»All testing and confirmation
and disconfirmation of a hypothesis
already takes place within a system.«
WITTGENSTEIN

From Questioning to Conversation

Introduction

Involving farmers in agricultural research activities has been part of the research agenda for more than a decade. However, farmers' involvement was often restricted to on-farm trials or the use of conventional survey methods like questionnaires. In the early 90s researchers involved in millet-breeding research at ICRISAT felt the need for a more intensive communication with farmers.
This led to a joint research project between the department of communication and extension at the University of Hohenheim in Germany and ICRISAT in India, focusing on communication tools for farmer-researcher interactions.

During the project (1994-96), classical Participatory Rural Appraisal (PRA) tools (modeling, mapping, ranking exercises, etc.) were tested, modified and adapted for agricultural research. The interaction with farmers as well as careful observation of their communication styles led to the development of new tools like seed mixture simulation, panicle selection and rainfall pattern exercise.

The exhibition introduces some of the communication tools applied in this research project.

»My own view, to be frank,
is that there is no such thing as the
scientific method.«
PUTNAM

Today, science is no longer regarded as
an endeavor that leads to objective
and true knowledge about the world
around us. It has become established,
that theories and facts are interdepen-
dent, and that facts are only facts
within a theoretical framework. Such
an approach acknowledges that
knowing comes from a perspective
and each perspective has its own bias.
  Participatory research recognizes
the existence of differing knowledge
systems and perspectives. The goal is to
bridge the gap between the actors of
different knowledge systems through
the creation of dialogical
communication.

Participatory Research
and its Goals

Participatory research is a
learning process for rural
people as well as for rese-
archers by sharing and
generating knowledge.

Such a process aims at con-
structing a consensus know-
ledge, which is constantly
becoming more informed
and sophisticated.

Participatory research
builds upon the innate
ability of all human beings
to create knowledge. The
creation of knowledge is
not a monopoly of
"professionals".

»... inventing tools may lead to the tyranny of tools. When tools become tyrannical, instead of making use of them, they rebel against their inventors and take revenge. Then we are made tools of the tools that we make.«
SUZUKI

Tools for a Dialogue

Communication tools can support farmers and scientists in expressing their knowledge, while at the same time creating opportunity to enter into a process of cyclic understanding. To achieve this, the tools must provide a platform for people that bridges the gap between the different communication styles and promote the expression of complex knowledge structures.

Creative and reflexive use of the tools is necessary to secure that the conversation does not lead to superficial results but to mutual in-depth understanding.

- The preferred mode of communication of scientists is asking questions, taking notes and processing the collected information in a written form. Their knowledge is often explicit.

- Farmers, on the other hand, generate and communicate knowledge through continuous collective practice. Their knowledge is often implicit knowledge. Painting, making clay figures and singing songs together are ways in which farmers in Rajasthan communicate with each other and pass on their knowledge over space and time.

- The tools build on these everyday practices and materials of local people, thereby enabling their involvement and the explication of their knowledge. The closer materials and items used are to the people's culture and daily life, the easier it will be for them to get involved and contribute their knowledge. Most tools build on visualisation as a basis for dialogue and analysis.

The women of Rajasthan have developed an elaborated practice of mixed sowing. The exercise simulates and visualises farmers seed mixture practices and promotes the verbalisation of diverse farming practices to scientists.

Working with clay is a common activity for people in Rajasthan - clay is used for the construction of buildings. Modeling with clay builds on this familiarity and skill.

»Interviewing is rather like a
marriage: everybody knows what it is,
an awful lot of people do it and yet
behind each closed front door
there is a world of secrets.«
OAKLEY

Semi-structured interviewing is the
core of participatory research with
farmers. Semi-structured interviewing
identifies only the intended topics for
the conversation beforehand. Contrary
to a questionnaire, the questions and
their order are not designed ahead of
time but are instead formulated during
the interview. They are situation-speci-
fic: setting, location, timing and the
people involved have an impact on the
course and outcome of the interview.
It is important, that the interviews be
conducted in natural and relaxed
situations, such as shops, markets or
public meeting places, at home or in
the fields.

Semi-structured
Interview
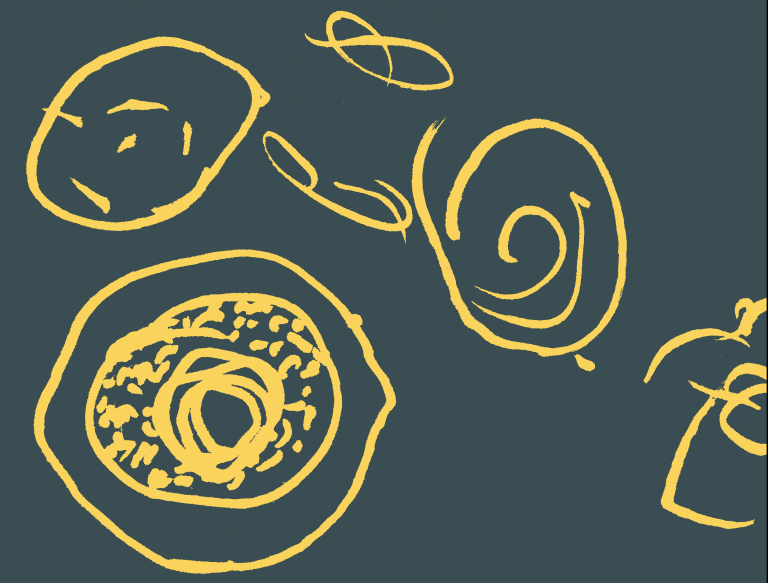
The researcher follows the
respondent on a journey
through his or her mental
landscapes. This requires
open-ended and
non-directive
questioning.

A "sharing of meaning" can
only be created through
the researchers careful and
friendly listening. Priority is
not the collection of scien-
tifically exploitable infor-
mation but mutual under-
standing.
Semi-structured interviews
are the backbone of each
farmer-scientist interaction.
The most sophisticated
participatory or dialogical
communication tools will
fail, if a relaxed and open
conversation is not
possible.

»All human thought comes into existence
by grasping the meaning and mastering
the use of language.«
POLANYI

Key Informant
Interview

Rural communities are social networks: men and women, pastoralists and agriculturalists, animal healers, barbers and priests are all connected through a communication and relationship web. The interplay between laymen and specialists has a great influence on the exchange of information and the generation of knowledge. Therefore it is important to talk to both laymen and specialists.

Knowledge regarding the number of families, land ownership, location of wells, soil types and the micro-environment of the village may be common knowledge to almost all members of the community, but there are people who have a more detailed knowledge in these areas. Such people and traditional specialists like animal healers, priests or astrologists, etc. are potential key informants. An intensive dialogue with key informants provides the chance to explore specific aspects in detail, to share in-depth knowledge and to move beyond the boundaries of the scientific and indigenous knowledge systems.


Old women of the Jat
community are experienced
in seed storage and
selection procedures.

fusion of horizons

»I have always found that most of
the mistakes in thinking
are not mistakes of logic at all
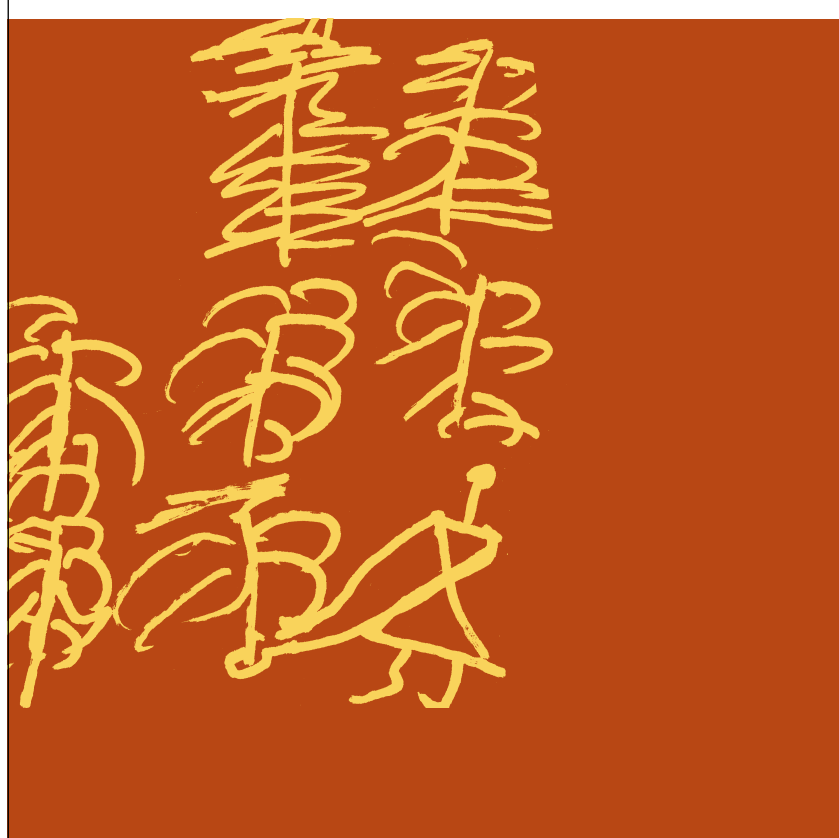but mistakes of perception.«
DE BONO

Transect

By walking through a cross section of
the community, spatial data such as
ecosystems, land use, settlement
patterns and the people's perception
of these can be investigated and
discussed in detail. This tool helps
generate an overview of a given area
(i.e. slopes, drainage, vegetation) and
at the same time draws attention to
unusual characteristics. Used in con-
nection with semi-structured inter-
views, this tool can be particularly
helpful in understanding interactions
between the physical environment
and human activities. It provides an
excellent possibility to enter into a
dialogue by giving the villagers an
opportunity to show and explain their
environment to outsiders and for out-
siders to ask questions about specific
features they have observed.
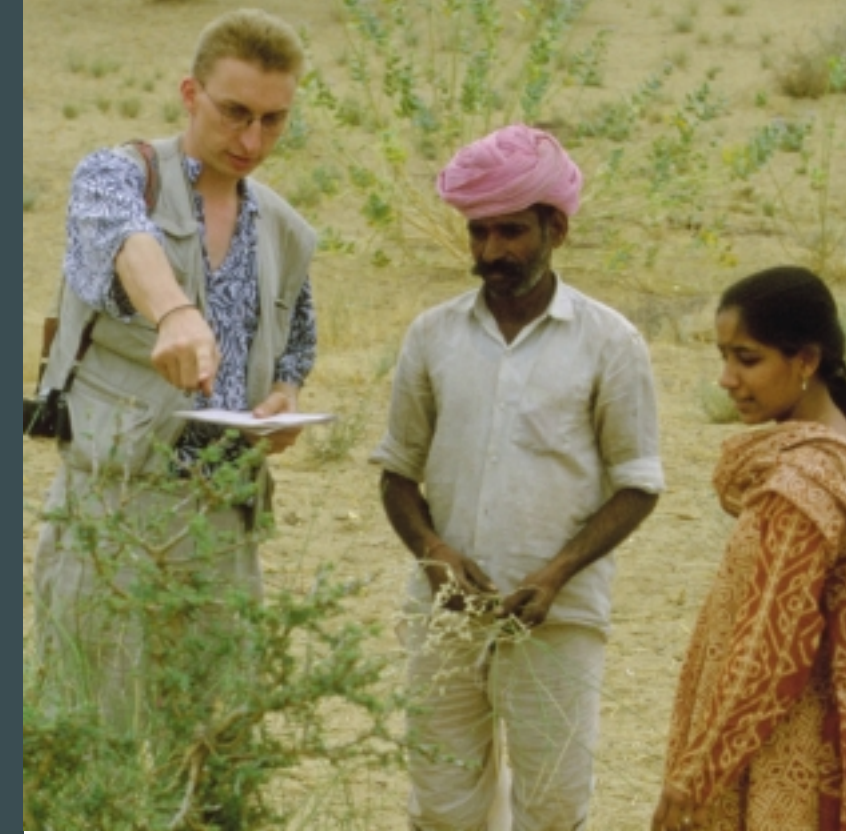
Farmers and scientists
discuss agro-ecological
conditions of the village,
such as the distribution of
wild plants in different
types of fields.

Drawing supports the
discussion about strategies
used by the farmers to
utilize the diverse con-
ditions of their plots,
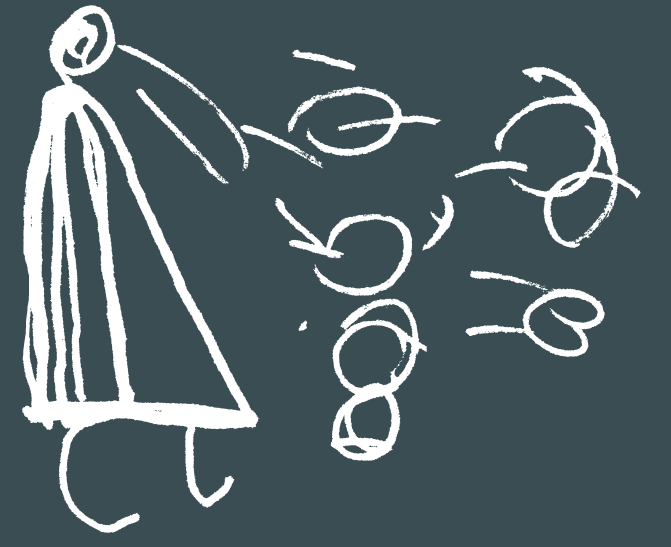according to soil, moisture
and fertility conditions.

pictures: thomas kummerow, mohan dhamotharan   layout: stephan von borstel

Resource maps and social maps are often among the first tools used by the PRA team during village visits. They can provide useful entry points for further discussion.

Resource maps focus on perception and use of land and natural resources, whereas social maps focus on social groups and on services, while at the same time including infrastructure and housing. Both provide different approaches towards understanding the interplay between people of the village society, their perceptions and their natural resources.

Resource Mapping
& Social Mapping

A process of dialogue between the different groups of the community is started and established through resource mapping. Problems, resources and potentials can be identified and related.

Discussions during and after the development of the map usually provide valuable insights - not only for the outsiders.
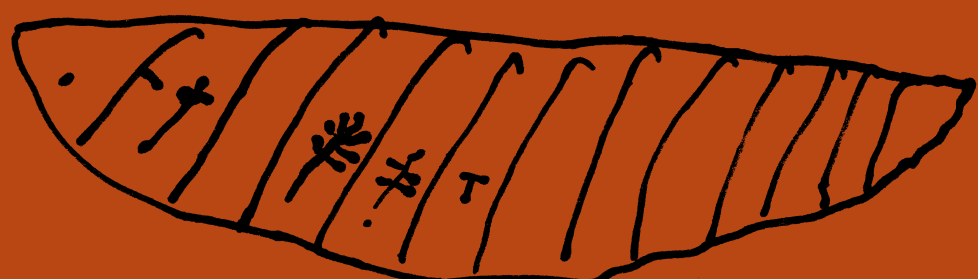
»Tacit knowledge is knowledge
commonly not conscious or for
spontaneous report,
but necessarily implicit.«
HYMES & DELL

Farm Mapping

While village mapping is successful in
generating an overall picture of the
bio-physical and socio-economical
situation of the village, it is not precise
enough to understand farming prac-
tices of farmers in detail. Farm map-
ping focuses on depicting the diffe-
rent plots cultivated by a farming
family. First, family members draw the
different plots they cultivate and cha-
racterize the plots in terms of suitabili-
ty for different plants. In a second
step, they explain what they sowed last
season and in previous seasons on the
different plots. By applying the tool of
seed mixture simulation and farm
mapping, the complex agricultural
practices of the farmers in Western
Rajasthan can be discussed.
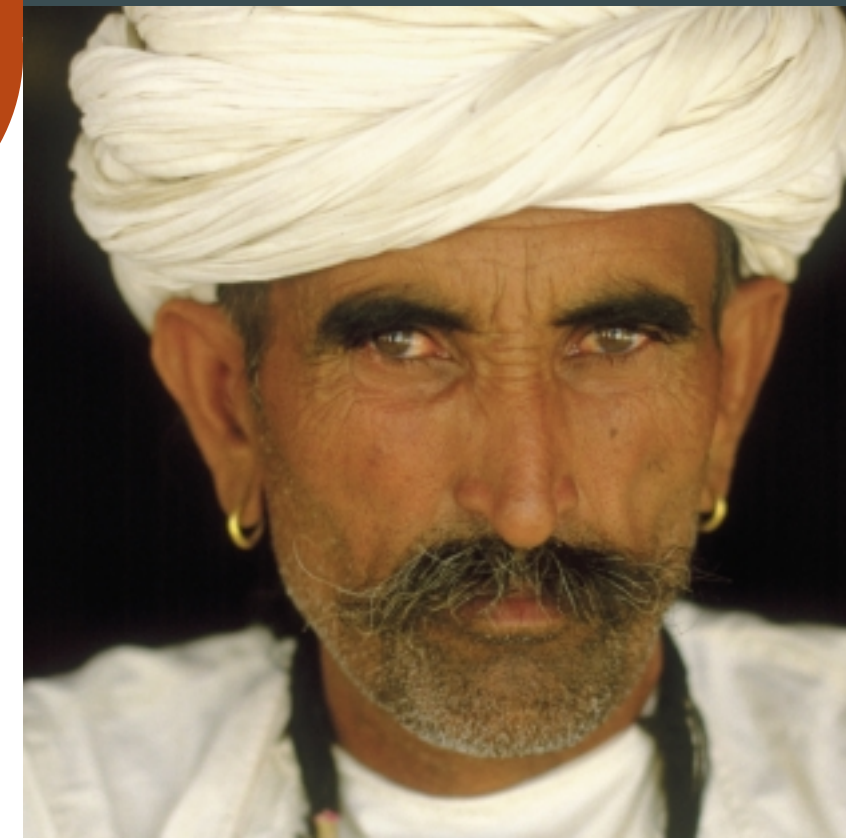
Such discussions revealed,
that farmers exploit the
diversity between their
plots and even within the
plots through careful
selection of plants and
varieties regarded as
suitable for the
conditions of the
different plots.

»A very long time ago there was
no mountain in Digadi. One day
the earth started to move and
a mountain came out of the earth.
It grew and grew. The people and
animals were frightened and started
to cry. The cows shouted "moo, moo".
Then the mountain stopped growing.
This was the origin of the mountain
in our village.«

ARJUN SINGH

Models, being three dimensional, have advantages over two dimensional representations such as mappings and drawings. They are, once carefully prepared, more accurate in representing the topography and are therefore more adequate in discussing for example moisture conditions in areas like Rajasthan, where the landscape is formed by plains hills and dunes and its consequences on use of different millet varieties.
Miniature depictions of the village can be used for weeks during periods of discussion – attracting curious villagers and passers-by.

Modeling

The potter of the village, familiar with clay works, and the barber, familiar with the social structure jointly prepared a village model, which was used during workshops. Even though the villagers of Rajasthan are familiar with working with clay, they are still fascinated to see their entire village as a clay model. The discussions focused on farmers' strategies in coping with the scarcity of water and the poor soil conditions in their villages.

»What is, in your opinion, the most
important agricultural problem you face?«

»Son, how can you ask me a question
like that? Last year, we had malaria here
and the whole family was sick.
We were unable to harvest even the ripe millet.
Three years ago we had no rain and after that
we had no good seeds for sowing.
What next year will bring, only God knows.«

Ranking

Ranking tools can be used to clarify
priorities, to elicit farmers' criteria, or
to evaluate results of trials. Ranking
can be done in a very simple manner
– by placing things into an order of
preference – or by carrying out more
elaborated exercises like pairwise and
matrix ranking.
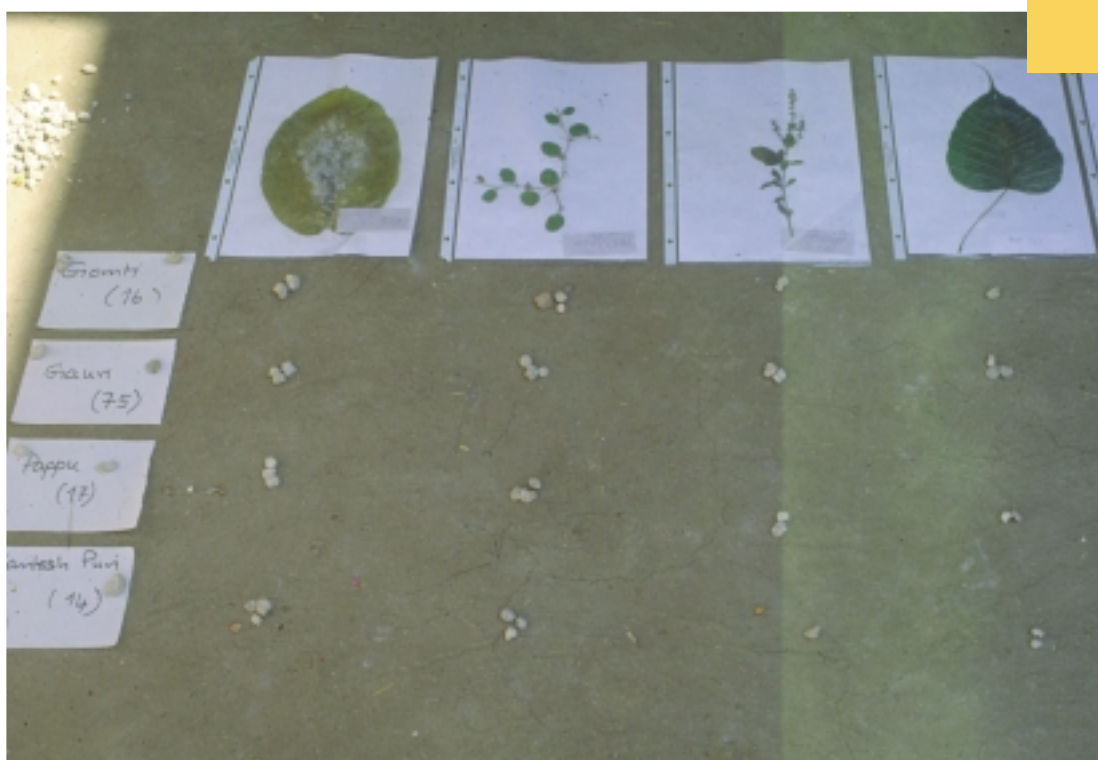
In this example elderly
women, young girls and
young men rank different
wild plants regarding
their usefulness.

■ Simple ranking between alternatives

Whenever the aim is to discuss how
people set priorities in a simple and
rapid way, alternatives are made
visual through symbols, pictures,
words, or the objects themselves
can be laid out as representations
and are then ranked by assigning
numbers, stones, seeds or whatever
other available material people feel
comfortable with.

■ Pairwise ranking

Pairwise ranking can be a useful
tool, when it is of importance, to
elicit, discuss and explore the crite
ria for decision-making. Items of
interest (trees, food, seeds, problems,
solutions, etc.) are compared one by
one, by asking informants which
they prefer and why. Once the
comparison is completed, a whole
set of explanations and reasons will
have emerged, making explicit the
different criteria which underlie
preferences and decision-making
processes.

■ Matrix ranking

Matrix ranking orders items
according to their criteria using
numbers, seeds, stones or the like
for scoring values.
This can provide a more differentia-
ted picture of the different choices
and the advantages or disadvan-
tages related to them.

fusion of horizons

»When the snakes slither
towards the tops of trees
when the winds blow westwards
when the storks in the sky fly in pairs
then the rivers will overflow
and the dams will break.«

SAYING FROM RAJASTHAN

Rainfall **Pattern**
exercise

Timelines are used to discuss and understand historical developments or trends as well as coping strategies over time. Timelines are of particular importance to farmers since much of their rationality is based on their past experiences and a long-term perspective for the future.

The rainfall pattern exercise is based on the experience, that farmers in Rajasthan monitor rainfall very carefully in terms of timing, quantity and intensity. Each month of the cropping season is marked on the ground using local names. A long or short stick, representing the quantity of the first rainfall, is placed on a respective month. The second rainfall is then compared to the first, regarding its quantity, and also translated into the length of a stick. This procedure is continued until all rainfall events of one or more seasons have been documented and compared.

The rainfall pattern exercise allows for a better understanding of farmers' coping strategies related to unpredictable rainfall. It enables a discussion about their strategies, about means to complement and improve them through participatory technology development. The visualization of the rainfall patterns of different seasons and the performance of crops provides a platform for complex discussions and dialogue.
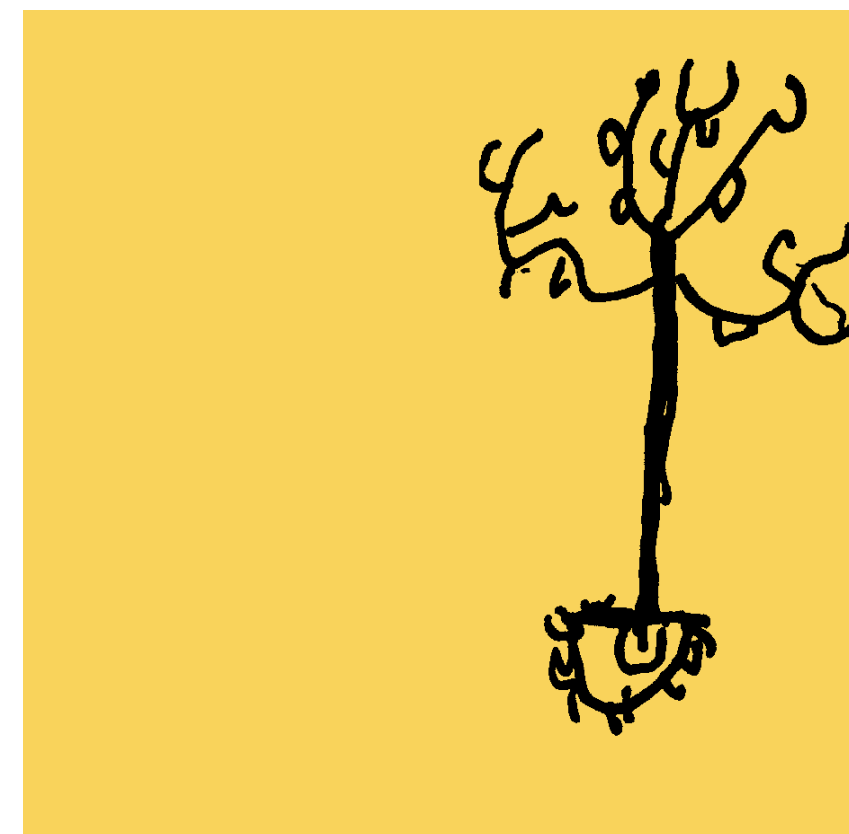
»Nothing entitles us to regard
any one system of classification,
say, the zoological system or totemism
or the cosmographic system
or the occupational system (castes),
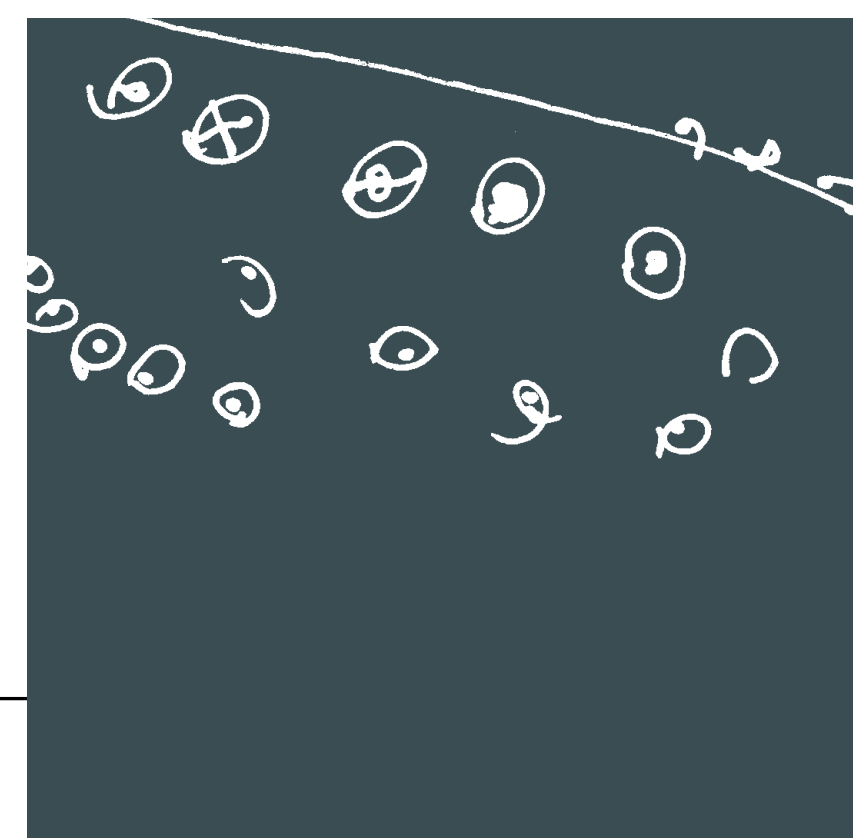as prior to the others.«
VAN GENNEP

The classification exercise is a tool to understand the ways people group a variety of items, revealing people's criteria and principles of classification. People from different cultures have their own classification system of plants, soils, food items, seeds, etc. which is difficult for outsiders to realize without such an exercise. A dialogue about such different classifications is an important step toward understanding each other. The classification of millet heads and the criteria used for classification initiated an intense discussion with pearl millet breeders of ICRISAT, who usually classify millet heads differently using other criteria.

Classification
Exercise

This millet head classification exercise is made up of two phases. The first phase involves understanding people's criteria and principles of classification. A collection of items, such as millet heads, is presented to a group of women for classification. They are asked to group the items in such a way that they feel the items belong together. This process leads to an intensive discussion about the criteria used to determine the classes and differentiate between them.

In the second phase the process turns into a conversation. Specific questions are raised and answers are discussed in order to understand how people use items to solve specific problems they face. By carrying out this exercise, implicit knowledge of villagers is made explicit, an exchange of ideas is promoted and a basis for the sharing of knowledge is developed.

It became clear during work in Rajasthan, that farmers carefully select panicles for seed use. In interviews, however, they could not easily explain what kind of panicles are appropriate as seeds. Based on this experience a collection of approximately 100 widely differing pearl millet panicles was prepared. The panicles represented: panicles of local materials, panicles of modern varieties with different features and panicles of germplasm that farmers may not be familiar with. Farmers were asked to select panicles from this collection for seed use. Once the preferred panicles were identified, the farmers were asked to explain the traits they look for when they select specific panicles.

This exercise is useful to understand how farmers select different types of pearl millet panicles as well as the traits they associate with certain panicles.

»The knowing process is a constant interplay between a changing world and a changing knower.«
PLOTKIN

Panicle **Selection** exercise

The simulation revealed that farmers' preferences were not general but very specific, depending on different conditions and that these preferences could vary greatly between different farmers from the same village. Farmers with sandy soil and low fertility conditions selected mainly land race material whereas farmers with good soils and fertility conditions preferred hybrid materials.

fusion of horizons

»Our fingers are all different, therefore
our hand is strong to grasp something.
Imagine if all fingers were the be same,
our hand would be very weak.
So mixing different varieties and different
plants makes our agriculture strong.«

FARMER IN RAJASTHAN

Seed Mixture simulation

Seed mixture simulation is a communication tool, developed to help understand the very elaborated seed mixture strategies of farmers in western Rajasthan.

Women in western Rajasthan are experts in agricultural activities such as seed selection and the preparation of seed mixtures for sowing. Interactions with them provided evidence that explaining such implicit knowledge of everyday activities was unfamiliar and therefore difficult for them.

Traditional knowledge, learned through observation of parents' practice and repeated own practice, is seldom verbalized in everyday life. A simulation of seed mixing allowed old women to explain their highly elaborate seed mixture strategies. Scientists were able to understand and start a dialogue about ways of supporting an agricultural production system based on seed mixtures.

The interviewers prepared a collection of seeds from different crops sown in this area. The farmers are asked to identify, select and separate the crops they are cultivating as mixed or sole crops. They are then asked to prepare small quantities of seed mixtures that represent their actual crops in different fields, different years and under varying conditions such as different soils, rainfall and crop rotation.
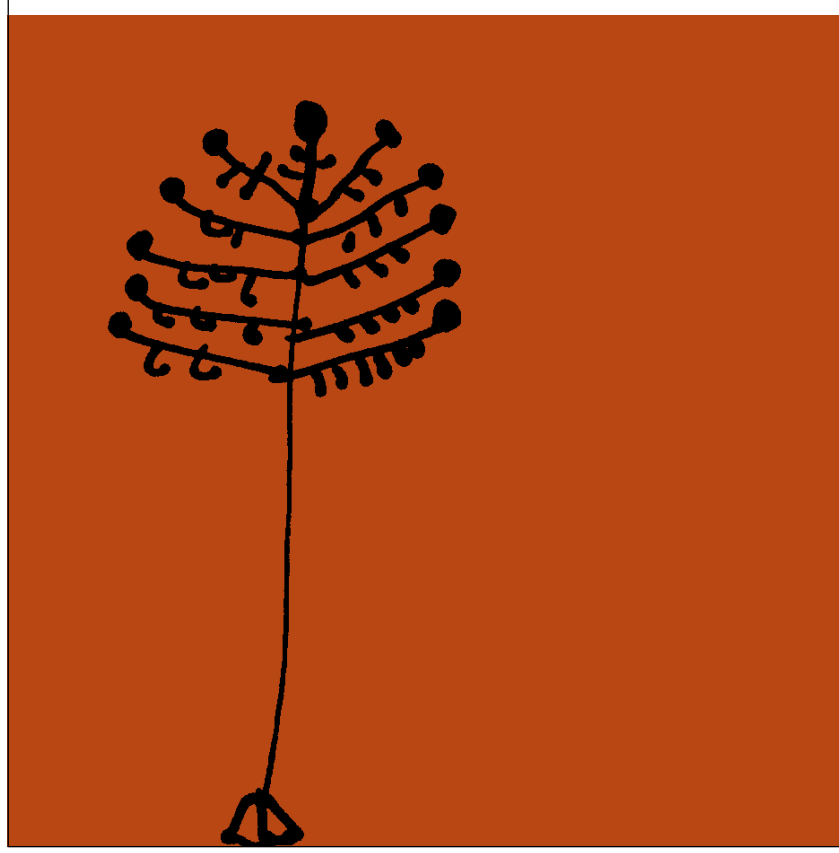
Dialogue, initiated with the help of the communication tools, revealed that farmers and scientists favor different strategies for improving agriculture in Western Rajasthan.

Farmers in Rajasthan perceive the diversity of natural conditions, plant species and varieties primarily as a potential for coping with the risk and uncertainty in agricultural production. Pearl millet is just one part of a complex agricultural practice which includes the use of around a dozen crops, many more wild plants and a wide range of varieties by families and communities. A social reason for favoring diversity is, that families and castes differ strongly in terms of agricultural performance, availability of money, land resources, quality of land and quantity and species of animals they own. A careful selection of seeds and an extensive exchange of selected seeds generates and provides the broad varietal options needed in such a strategy.

During scientist-farmer interactions past research strategies were critically reflected and areas for future collaboration were identified. Instead of focusing on the improvement of a single element of a complex system, like the development of new varieties for dissemination to farmers, future collaborations could jointly develop methodologies, technologies and varieties that widen the options of farming communities. Such participatory technology development can not be guided by the idea of extracting farmers knowledge from its context so that it matches categories of information determined by the needs of scientists. Continuous effort toward reaching a better understanding of each others knowledge and strategies is the backbone of a fruitful farmer-scientist collaboration. For such a fusion of horizons, communication tools like the ones presented here, play a crucial role.

»Changes ... will come only as we change our methods, our own behaviors and our own attitudes toward science...«
NADER

Summary and Challenges

pictures: thomas kummerow, mohan dhamotharan   layout: stephan von borstel / SVBorstel@aol.com