

Transforming knowledge and ways of knowing for food sovereignty and bio-cultural diversity

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Introduction

The search for 'food sovereignty' is part of a wider affirmation of the right to self-determination and endogenous development. New social movements for food self-reliance in the context of endogenous development are arising worldwide. Their struggles to redefine 'development' in terms of bio-cultural diversity and citizenship are of particular relevance for the key topics addressed in this book.

Throughout Latin America and in much of Africa as well as South and South East Asia, farmers, pastoralists, women, indigenous peoples and migrants are organizing and linking together with their counterparts in the North. They are gaining support from scholars, activists, consumers and progressive policy-makers (Cohn et al, 2006). This emerging food sovereignty movement is typified by both rapid change and extensive global networks. The 'orderly battalions and colourful banners' of traditional opposition politics are being replaced by more diffuse, ambiguous, networked arrangements, all reminiscent of Manuel Castells' vision of a 'network society' (Castells, 1996).

Local organizations and federations increasingly seek to have a greater say in the governance of food systems. In so doing, they challenge liberal understandings in which citizenship is viewed as a set of rights and responsibilities granted by the state. Instead, citizenship in the context of locally determined food systems is claimed, and rights are realized, through the agency and actions of people themselves. Local organizations and federations are thus increasingly becoming expressions of an emergent citizenship in the governance of food systems (Pimbert, 2006a). People have special rights when it comes to food, and claiming and exercising these rights to 'food sovereignty' have become a movement that is very much in tune with this concept of citizenship. La Via Campesina and the People's Food Sovereignty Network defines this new paradigm for food and agriculture as follows:

Food Sovereignty is the right of peoples to define their own food and agriculture; to protect and regulate domestic agricultural production and trade in order to achieve sustainable development objectives; to determine the extent to which they want to be self reliant; to restrict the dumping of products in their markets; and to provide local fisheries-based communities the priority in managing the use of and the rights to aquatic resources. Food Sovereignty does not negate trade, but rather it promotes the formulation of trade policies and practices that serve the rights of peoples to food and to safe, healthy and ecologically sustainable production. (www.viacampesina.org)

However, in the face of the organized power of science, business and mainstream politics, the more diffuse – but networked power – of the growing food sovereignty movement is confronted with many interrelated challenges. In this chapter I focus on only one of these: the need to fundamentally transform knowledge and ways of knowing for ‘food sovereignty’. After identifying some of the types of knowledge needed for transformation towards ‘food sovereignty’ I discuss possible ways of reclaiming knowledge for bio-cultural diversity and endogenous development.

Transforming knowledge

Knowledge plays a significant role in ‘development’ and ‘environment’. It is important because it shapes society not only through technology, but also through instilling values and assumptions that motivate human beings and inform national policies. The endogenous development of food systems based on bio-cultural diversity requires radically different knowledge from that on offer today in mainstream institutions (universities, policy think tanks, donor organizations, trade unions and so on). There is a need to actively construct knowledge for diversity, decentralization, dynamic adaptation and democracy. Transformation of knowledge is needed in several areas, which I discuss below.

Going beyond ecologically blind science and the neglect of dynamic complexity

The science of parts (reductionism), *as opposed to knowledge and ways of knowing that integrate the parts*, has largely failed to guide agro-ecosystem and natural resource management. Narrow lens, universal and reductionist explanatory models have generated a crisis in natural resource management through their inability to come to terms with the dynamic complexity and variation within and among ecosystems (Gunderson et al, 1995). Reductionist knowledge has selectively favoured corporate profits as well as control over labour and nature in simplified and standardized production systems. Terminator seeds (GURTS) are the latest flagship in this corporate enclosure of farmers’ and nature’s autonomy. And for many indigenous and local communities, even existing models of ecology and landscape dynamics usually miss out the critical linkages between biodiversity, culture, spirituality and livelihoods.

Environmental as well as bio-cultural dynamics and effects are usually long-term and their emergent complexity calls for more holistic and transdisciplinary ways of knowing. For example, the concept of ‘indigenous bio-cultural heritage areas’ (IBCHA) explicitly reunites ecology, spirituality, territory and human well-being as a basis for landscape management and the protection of indigenous peoples’ rights in the Peruvian Andes (see Box 1).

Box 1 The Potato Park as an indigenous bio-cultural heritage area in the Peruvian Andes

IBCHAs are a community-led and rights-based approach to conservation that ensures local livelihoods using the knowledge, traditions and philosophies of indigenous peoples related to the holistic and adaptive management of their landscapes, ecosystems and biological and cultural assets. An IBCHA also incorporates the best of contemporary science, conservation models and rights-based governance approaches, including the World Conservation Union's (IUCN) Category V Protected Areas and Community Conserved Areas (CCAs). Indigenous bio-cultural heritage refers to a wide range of traditional resources – both tangible and intangible – including land, biogenetic resources, traditional knowledge, customary law, spiritual values and landscapes that are passed down from preceding generations and confer rights to current ones.

The Potato Park focuses on protecting and preserving the critical role and interdependency of indigenous bio-cultural heritage for local rights, livelihoods, conservation and sustainable use of agricultural biodiversity. The park is in an area known as a microcenter of origin and diversity of potatoes, one of the world's major food crops, which has been protected for centuries by the deeply-rooted local food systems of the Quechua peoples. The Potato Park, as its name denotes, celebrates the tremendous diversity of native potato varieties and other native Andean crops characteristic of Andean food systems.

With the support of a local NGO (ANDES), indigenous Quechua communities in the region of Cusco have become organized into 'local platforms' for the adaptive management of mountain landscapes and livelihood assets. Most importantly, the Association of Communities of the Potato Park is responsible for running the park. The Association's members include the traditional head authority of each of the communities, along with representatives of local residents, NGOs, traditional authorities, local cooperatives and others. For the Quechua, the ecological, social, economic and cultural realms of human life are integrated through local organizations, institutions, laws and policies that transform assets (natural, physical, financial, human, social, cultural) into livelihoods. Examples of such indigenous transforming structures and processes include:

- The development of community-to-community and farmer-to-farmer learning networks based on the principle of *ayni* (reciprocity). Exchange is promoted through the sharing of information, practices and learning processes. Local platforms (organizations) of 'barefoot technicians' elected by their own communities network with other communities and create opportunities to share and transfer traditional knowledge and innovations.
- The consolidation of local grassroots enterprises. These groups are anchored in Andean principles of reciprocity and a local definition of well-being. The organizations work using the principles of Andean economy to reinforce local food systems within a holistic approach to the adaptive management of bio-cultural landscapes.

This local adaptive management of Andean landscapes thus helps sustain the Quechua's collective bio-cultural heritage.

The Potato Park is dedicated to safeguarding and enhancing these food systems and native agro-biodiversity using the adaptive and holistic approach described by the IBCHA model. The epistemological bridges prescribed by the approach link traditional and science-based understandings of the multiple functions of agricultural biodiversity – including the close interaction between wild and domestic plant and animal diversity – and how they sustain local livelihoods. The traditional knowledge, innovations and practices of Quechua peoples are showcased in the park for their essentially modern significance and utility, including for the purposes of pharmaceuticals, agro-ecotourism activities, and community-based

conservation. In terms of the rights-based approach prescribed by the approach, the Potato Park is concerned with indigenous peoples' self-determination and securing Quechua people's tenure and rights to agricultural biodiversity, local products, traditional knowledge, and related ecosystem good and services.

As an IBCCHA, the Potato Park has been proposed as a *sui generis* system for the protection of traditional knowledge because it aims at protecting traditional knowledge systems within its cultural, temporal and spatial dimensions using a combination of positive and defensive protection tools.

Source: ANDES and IIED, 2005

Similarly, a deeper understanding of the principles of organization that ecosystems have evolved to sustain the web of life can provide a solid basis for the design of autonomous technologies and ecologically sustainable food systems. Agroecological knowledge, ecological literacy and ecodesign are cases in point here. Agroecology is key for rethinking agricultural production (see Box 2). And more ecoliteracy and ecodesign are needed to reduce the ecological footprints of other parts of the food system (for example, food processing, storage units and waste treatment). The challenge here is to develop sweepingly new knowledge in which:

The blending of architecture, solar, wind, biological and electronic technologies with housing, food production, and waste utilisation within an ecological and cultural context will be the basis of creating a new design science for the post petroleum era. (New Alchemists, 1979)

Box 2 Agroecology as the basis for ecological agriculture

At the heart of agroecology is the idea that agroecosystems should mimic the biodiversity levels and functioning of natural ecosystems. Such agricultural mimics, like their natural models, can be productive, pest resistant and nutrient conserving. Indeed, in both low external input and high input agriculture, the goals of sustainability, productivity and equity may best be met through agroecosystem designs that enhance functional diversity at the genetic, species and landscape levels.

Ecological agriculture based on the principles of agroecology has been shown to be productive, economical and sustainable for both low and high external input farmers. Scientists recently reported that a series of large-scale experimental projects around the world that used and tested agroecological techniques (crop rotations, intercropping, use of mulches and compost, terracing, nutrient concentration, water harvesting, and management of micro-environments) yielded spectacular results (Altieri and Uphoff, 1999; Pretty and Hine, 2000). Gains were particularly noteworthy in resource poor areas that had been labelled as incapable of producing food surpluses. For example, in southern Brazil, the use of cover crops to increase soil fertility and water retention allowed 400,000 farmers to increase maize and soybean yields by over 60 per cent. Agroecological projects involving about 730,000 farm households across Africa resulted in yield increases of between 50 and 100 per cent.

Unlike most conventional agricultural research, agroecological approaches consciously seek to combine the experiential knowledge of farmers and indigenous peoples with the latest insights from modern science. Local knowledge and indigenous management systems are usually effective responses to site-specific challenges and risks. They are, after all, based on literally hundreds of years of collective observation, experimentation and adaptive management of dynamic complexity and diversity (from genetic complexes to whole

landscapes). Good agroecologists value and build on such farmer-led experimentation as well as on the innovations and intellectual contributions of farmers, pastoralists and forest dwellers. Similarly, agroecology draws on the emergent science of dynamic complexity: ecology, population biology and ecological genetics, chaos theory, and whole systems theory. New insights gained here can also help provide the basis for the ecological design of resilient, productive and sustainable farming and land use.

New agroecological knowledge systems derived from such combinations of 'indigenous' and 'modern' always need to work with the complexity and diversity of ecosystems in a constructivist approach to science. This is to ensure that innovation and learning become embedded in management and that farmers are active cocreators of knowledge. Moreover, experience shows that when this happens 'new methods rapidly spread among farmers', thus showing 'the potential for farmer led dissemination of even complex technologies when users are actively engaged in understanding and adapting them instead of just being trained to use them' (Altieri and Uphoff, 1999).

A central challenge across the whole range of agroecosystems is to find alternatives to the input substitution approach and future dependence on costly and unreliable biotechnology packages. This can be achieved through an agroecological approach that seeks to break the monoculture structure and dependence on suppliers of off-farm inputs through the design of integrated agroecosystems. By assembling a functional biodiversity within and around agroecosystems, it is possible to encourage synergisms that subsidize agroecosystem processes by providing ecological services, recycling of nutrients, and enhancement of natural enemies of pests to produce diverse, quality foods and other farm products (Altieri, 1995; Pimbert, 1999 and references therein). By using biodiversity to enhance agroecosystem functions, this ecosystem-analog approach can thus enhance local and national autonomy by eliminating the need for external agro-chemical inputs and transgenic technologies. Moreover, an agroecologically informed transformation of farming systems can also significantly reduce the current cost-price squeeze and debt trap in which the world's farmers are increasingly being caught.

Overcoming myths on people and environment relations

Neo-Malthusian environmental policy narratives are still used by external bureaucracies to blame people for environmental degradation and justify imposing on them massive and widespread use of standard environmental management packages (see Leach and Mearns, 1996; Ross, 1998). These myths manifest themselves through the neglect of local people – their knowledge, priorities, management systems, local institutions and social organization – and the value to them of local assets (natural, social, cultural). Within this dynamic of 'denying and undermining the other', powerful actors seek to control the food system and natural resource management through discourse, law, coercion and violence. Misleading, simplified and ahistorical perspectives perpetuated by powerful bureaucracies and institutions are a persistent feature of environmental policy-making and interventions. Soil erosion, degradation of rangelands, desertification, loss of forests, the destruction of wildlife and fisheries, all of these problems appear to require intervention to prevent further deterioration, and local misuse of resources is consistently defined as the principal cause of destruction. According to Peluso (1996), all too often 'by depicting resource users (the local ones) as wild, destructive (or illiterate, uneducated, backward or non-innovative), state resource management agencies think they can justify their use of militaristic environmental protection.

These policy (or crisis) narratives are usually robust, hard to challenge, and slow to change. They play a key role in policy- and project-level decision-making. They structure options, define relevant data, and exclude other views within bureaucracies and professional circles. And yet, recent research has debunked several orthodox views and dominant myths on people–environment interactions (see Box 3). A future challenge lies in bringing together such plural forms of knowledge within a more comprehensive, *power equalizing* dynamic of participatory learning and action. This approach to transforming knowledge will need to be grounded in empowering pedagogical approaches and decentralized ways of knowing that enable more rural people and other citizens to directly access, produce, negotiate and use knowledge on complex dynamic systems to secure their rights, resources and ecosystems.

Box 3 Debunking myths on people–environment interactions

Recent research has fundamentally questioned many of the environmental crisis narratives and received wisdoms on the supposed environmental destructiveness of rural people. A combination of historical analysis, social anthropology, participatory methods to understand local resource users' knowledge and perspectives, and insights from non-equilibrium ecology has challenged some of the environmental knowledge taken for granted by government bureaucracies and donors:

- Contrary to neo-Malthusian assumptions, population increase may not necessarily mean more environmental degradation and less biological diversity. More people can mean more care for the environment as shown by research in Sierra Leone and Kenya. And biodiversity may be enhanced or even be dependent on the activities of indigenous and local communities in conservation and protected areas.
- Historical research in West Africa has shown dominant deforestation estimates to be vastly exaggerated. Many of the vegetation forms that ecologists and policy-makers have used to indicate forest loss, such as forest patches in savannah, are, according to the knowledge of local resource users and historical evidence, the results of landscape enrichment by people.
- New perspectives in ecology have challenged conventional views of dry lands in Africa as stable ecosystems subject to decline and desertification once carrying capacity is exceeded. Rangelands are resilient and less prone to degradation and desertification than once thought. The new findings concord with the knowledge of many local herders and emphasize how rangelands are subject to high levels of spatial and temporal variability, and ecological dynamics are characterized by sudden transitions rather than slow and predictable change.

See Fairhead and Leach, 1996; Kandeh and Richards, 1996; Pimbert and Pretty, 1995; Sullivan and Homewood, 2004; Tiffen et al, 1994.

Decolonizing economics

Decolonizing social imagination from the scientism of neo-classical mathematical economics and neo-liberal economic dogma is essential for transformation towards food sovereignty. Simply put, current knowledge and policies for growth in food and farming are leading to the economic genocide of unprecedented numbers of farmers and rural livelihoods throughout the world (Perez-Vitoria, 2005). The need to rehumanize and re-enchant economics has been well stated by Castoriadis (1996):

What is needed is a new creation of the imagination that is of unprecedented importance..., a creation which would put at the centre of human life other meanings than the mere expansion of production and consumption, one which would offer goals in life that are recognized by other human beings as being worthwhile... This is the immense difficulty we are faced with. We should want a society in which economic values have ceased to be central (or the only ones), where the economy is put back in its place as a means for human life and not as its ultimate goal, and in which we therefore give up the mad race to consume more and more. This is not only necessary to avoid the final destruction of the planet's environment, but it is also and especially needed to rescue fellow human beings from psychological and moral misery.

'Learning our way out' partly depends on participatory learning and action that builds on local realities and different indicators of well-being, wealth and the 'good life'. For example, in Canada collaborative inquiry largely based on the experiential knowledge of farmers has helped debunk the economic myths that have informed agricultural development over the last 60 years (see Box 4).

Box 4 The farm crisis, bigger farms and the myths of 'competition' and 'efficiency'

The Canadian National Farmers Union (NFU) and its members took a critical look at the fundamental assumptions that underlie agricultural policy in Canada and in much of the world. The results offer a fresh and original analysis of concepts such as efficiency, competition, economies of scale, the effects of technology, and the allocation of profits within the agri-food system.

Family farms are generally painted as inefficient, and their loss is swept aside as an unfortunate but necessary effect of progress. However, overwhelming data show that the family farm sector may be among the most efficient in the entire Canadian economy. Data from Statistics Canada show that over the past 40 years, no other sector has matched the efficiency gains of farmers.

'When you liquidate a population, one of the things that you need to do is to tell lies in order to devalue and marginalize those people. The most pernicious lie told about our family farms during this crisis is that they are "inefficient"' (Stewart Wells, President of the Canadian National Farmers Union).

'Inefficiency rhetoric is nothing more than a smokescreen: a propaganda tactic deployed against farm families, workers, and rural communities. Only by peeling away the myths and lies can we understand the rural crisis and begin to see *who* is destroying our farms' (Prince Edward Island farmer Ronald MacFarlane).

New evidence shows that poor government policies, defective markets and powerful corporations undisciplined by competition are wiping out family farms. Such citizen-led participatory research can thus successfully deconstruct economic myths on 'competition' and 'efficiency' that often resonate with, and reinforce, Malthusian and social Darwinist views on survival of the fittest.

Source: Canadian National Farmers Union, 2003

Similarly, new knowledge on the economic importance of barter markets in the Peruvian Andes has been generated through participatory research with indigenous peoples whose food security depends on these non-monetary forms of economic exchange (see Box 5). New barter markets are being consolidated in the Andes

because they directly contribute to the survival of peasant families and indigenous communities. They do not entail taking refuge in residual and archaic economic-social formulas. They are instead local choices for autonomy and socio-ecological resilience in the context of the increasingly unequal distribution of the costs and benefits of economic globalization (Marti, 2005; Marti and Pimbert, 2006).

Box 5 Barter markets in the Peruvian Andes

The valley of Lares-Yanatile in Cusco (Peru) is rich in biodiversity, containing three different agro-ecological zones between the altitudes of 1,000 to 4,850 metres: *yunga*, *quechua*, and *puna*. Andean tubers and potatoes are grown in the highest zone, corn, legumes and vegetables in the middle area, and fruit trees, coffee, coca and yucca in the lower part. Every week a barter market is held in the middle area of the valley, where nearly 50 tonnes of goods are traded each market day, 10 times the volume of food distributed by the National Programme of Food Assistance. Anyone can participate, and can trade any amount of any crop.

Women are key players in this non-monetary market, which is vital in ensuring that their families have enough food to eat, and that they have a balanced diet. The rainforest supplies vitamin C, potassium and sodium through fruit such as citrus and bananas that do not exist in the *quechua* and *puna* zones. The middle and high zones supply mainly potatoes and corn, which provide desperately needed carbohydrates to the rainforest zone. Principles of reciprocity and solidarity guide the economic exchange of a diversity of foods, ensuring that the needs of people and the land are met in culturally unique ways. Indeed, recent action research has generated new evidence on the importance of Andean barter markets for:

- access to food security and nutrition by some of the poorest social groups in the Andes;
- conservation of agricultural biodiversity (genetic, species and ecosystem) through continued use and exchange of food crops at the markets;
- maintenance of ecosystem services and landscape features in different agro-ecological belts along altitudinal gradients and at multiple scales;
- local, autonomous control over production and consumption and, more specifically, control by women over key decisions that affect both local livelihoods and ecological processes.

A web of local organizations operating at different scales (from the household to the whole landscape) governs these forms of economic exchange and contributes to the adaptive management of environmental processes and natural resources. In addition to contributing to the food security of the poorest of the poor, this decentralized web of local organizations also enhances cultural, social and ecological resilience in the face of risk and uncertainty.

Source: Marti, 2005

As substantive economic forms (Polanyi, 1957), barter markets and other non-monetary exchanges can help in rethinking mainstream economics on the basis of radically different principles (for example, reciprocity, solidarity, affection, respect, equity, sustainability) and a diversity of polycentric institutions (for example, women's collectives, families, communal assemblies, citizen federations) (see Latouche, 1998; 2003).

In this context, the more inclusive economic arrangements that are proposed by women are particularly important for at least two reasons. First, women are generally more harmed than men by the growing inequalities, insecure employment and social unrest that have marked the last two decades of neo-liberalism (1980–2000). Moreover, the degradation of living conditions in poorer households nearly everywhere has translated into an increase in levels of violence, particularly in domestic and sexual violence, of which women are the main victims. For example, as many as 40 per cent of adult women are now subjected to domestic violence in Europe (58 per cent in Turkey), and it is estimated that in 2002 alone, over four million young girls and women were sold for use as slaves, wives or prostitutes throughout the world (Le Monde Diplomatique, 2003).

Second, – as several feminist economists have shown – the gendered structure of the economy, as well as male bias in national and international economic policies, deeply constrain the institutionalization of both gender and inclusive participation in development. More specifically, the neo-liberal approach to development and corporate-led globalization affirm the superiority of ‘economic efficiency’ and the ‘commodity economy’ to the detriment of the ‘care economy’ where women have a predominant responsibility, and the many subsistence economies that harbour diverse definitions of well-being and relationships between society and nature.

Transforming ways of knowing

Attempts to reconstitute knowledge for endogenous development and bio-cultural diversity seek to better link local and global knowledge in respectful conversations and build mutual understanding, solidarity and peace, while addressing the pressing social and ecological challenges of the 21st century.

The food sovereignty movement is increasingly challenged to actively develop more autonomous and participatory ways of producing knowledge that are ecologically literate, socially just and relevant to context. This implies a radical shift from the existing top-down and increasingly corporate-controlled research system to an approach that devolves more responsibility and decision-making power to farmers, indigenous peoples, food workers, consumers and citizens for the production of social and ecological knowledge. The whole process should lead to the democratization of research, diverse forms of co-inquiry based on specialist and non-specialist knowledge, an expansion of horizontal networks for autonomous learning and action, and more transparent oversight. This implies: first, cultural values that emphasise more direct citizen participation in determining research agendas, regulations and policies; second, new professional values, participatory methodologies and behaviour; third, the adoption of a learning process approach in the production and validation of knowledge; and fourth, enabling policies that offer citizens adequate material security and time for democratic deliberation in the context of more localized food systems and economies.

Consistent with a ‘dual power approach’ to transformation, the food sovereignty movement needs to actively engage in two distinct (but possibly complementary) ‘ways of knowing’.

Democratizing science and technology research

Despite its emphasis on local knowledge and management systems, the 'food sovereignty' movement also looks to the liberating potential of modern science and technology. This is particularly true with the development of miniaturization, multipurpose machines, multimedia and computer assisted technology, knowledge in agroecology, and efficient renewable energy systems. All of these can enhance local autonomy and ecologies, minimize pollution, and expand the realms of freedom and culture by eliminating needless toil. But local organizations and citizen federations should decide which new innovations are needed, when, where and under what conditions along the food chain and in everyday life. Hence the need to re-embed citizens in the production of knowledge and fundamentally democratize social and natural sciences research organizations.

The overall aim here is to create spaces and processes that allow for more direct citizen participation and pluralism in deciding on the allocation of funds for research, setting strategic research and development (R&D) priorities, in validating knowledge and new technologies, ascertaining risks in the face of considerable open-ended uncertainties and in framing policies for food and farming. This approach seeks to broaden democratic control over existing public research institutions and universities in order to transform theory and practice. In this context, a range of institutional and methodological innovations based on citizen deliberation and inclusion may help reconstitute knowledge and technologies for ecological sustainability, social justice and human liberation (see Box 6).

Box 6 Democratizing science and technological R&D: Some institutional and methodological innovations

1. Open up decision-making bodies and governance structures of R&D organizations to allow a wider representation of different actors and greater transparency, equity and accountability in budget allocation and decisions on R&D priorities. Throughout the world, there is a dire need for much wider and more gender-balanced representation in these institutions by different citizens: small farmers, tribal people, forest dwellers, fisherfolk, healers but also farm workers, small food processors, retailers and consumers. These bodies set the agenda for the design of food and farming technologies. They are immensely powerful in that they broadly decide which technologies will ultimately be developed, why, how and for whom. And yet the governance of science and technological R&D is presently largely dominated by men who are increasingly distant from rural realities and moving closer to corporations.
2. Use regular citizen panels, consensus conferences, citizen juries, future scenario workshops and referendums to capture the full diversity of interests and values in deciding on strategic research and funding priorities in the social and natural sciences, the allocation of resources and technological risk assessments. Citizens' commissions for science and technology futures should be set up to guide and connect research, training and policy institutions. These deliberative and inclusive democratic procedures will clearly need to be linked into the formal policy process through appropriate reforms that allow citizens to more directly frame policies and regulations. Recent experiences (Pimbert and Wakeford, 2001; 2002; IIED, 2006) also suggest that these forms of participatory democracy can help reframe policies on the future of food and farming to reflect broader social interests and goals, rather than narrow corporate interests and elite expertise.

3. Reorganize conventional scientific and technological research to encourage participatory knowledge creation and technological developments that combine the strengths of farmers and scientists in the search for locally adapted solutions and food systems. Effective and interdisciplinary partnerships are needed to link natural and social sciences with indigenous knowledge to address needs and problems in specific local settings that are typically marked by complex and dynamic change. An important goal here is to ensure that both knowledge and technologies are tailored to the diversity of human needs and the situations in which they are to be used. This must be on the basis of an inclusive process in which the means and ends of R&D are primarily shaped *by and for* citizens through conscious deliberation and negotiation.
4. Ensure that knowledge, genetic resources and innovations remain accessible to all as a basic condition for *economic* democracy and the exercise of human rights, including the right to food and participation. Decisions to issue patents on knowledge embodied in products and processes (seeds, software and so on) and national intellectual property rights legislation require more comprehensive public framing of laws and policies based on deliberative and inclusive models of *direct* democracy.

Source: adapted from Pimbert, 2004

De-institutionalizing research for autonomous learning and action

This approach seeks to strengthen citizen-led innovation and organize networks of knowledge users on the basis of a more horizontal and egalitarian logic, working independently and outside the state and the market. According to Illich (1970; 1975), such endogenous knowledge creation by and for the people means: first, taking responsibility for one's own learning process; second, having unrestricted access to learning tools; and third, addressing issues that relate to people's aspirations and lives. According to Finger and Asun (2001):

Against the constant and pressing need for expert knowledge to catch up with the industrial development future, endogenous knowledge proposes to 'celebrate the awareness' of the social construction of knowledge and science, and to take the responsibility to 'create' alternative futures.

De-institutionalizing research for autonomous learning is thus seen as a way to move from 'communes of resistance' to sustainable communities that confederate into larger food sovereignty networks, and in which citizens participate in a direct and democratic way (Pimbert, 2006a).

In the Peruvian Andes example (see Box 1) Quechua communities are linked through socio-cultural networks for horizontal learning and action. Platforms of local resource users from the Potato Park reach out to neighbouring indigenous communities, with 'barefoot technicians' building new confidence and capacities for the collective production of useful social and ecological knowledge. This endogenous socio-cultural network is thus engaged in learning-by-doing for the local adaptive co-management of mountain ecosystems and ecological networks. But it is also developing the 'soft side' of the land: customary institutions and forms of governance rooted in the concept of IBCHA.

In Bangladesh, the experience of the Nayakrishi Andolan, or the New Agriculture Movement, provides an important grounding and practical setting for the development of innovative farmer-centered approaches for learning and action (see Box 7). As an autonomous network for learning and action, the Nayakrishi Andolan

builds on rural peoples' systemic art and science of combining and integrating all aspects of life. According to Mazhar et al (2006), its holistic orientation seeks to reunite those dimensions that civilisation has systematically broken into institutional and social silos, including livelihood (labour), wealth (capital), reciprocity (market), governance (government), spirituality (religious institutions), knowledge (science), aesthetics (arts), love (family) and pleasure (sex and entertainment).

Box 7 Autonomous research and learning networks in Bangladesh

Nayakrishi Andolan is a peasant movement in Bangladesh that includes more than 100,000 farmers supported by UBINIG. UBINIG and Nayakrishi Andolan are committed to building a 'Peasant World University': an 'institution' capable of generating new and inclusive learning about agrarian livelihoods through horizontal networks that build on marginalized expressions of living knowledge. This living knowledge is the learning co-generated and distributed in multiple spaces: in farming practices, products, fields, landscapes, and in the village campuses that are made up of men and women, old and young, potters and farmers, artisans and healers, fishers and hunters, leaders and priests, story tellers and musicians.

Nayakrishi Andolan and UBINIG have actively combined efforts to put into practice the art and science of learning-by-doing through a variety of interrelated knowledge producing activities. These include systematic rethinking of agriculture as the art of generating and managing both cultivated and uncultivated space. Innovative practices go beyond mere creation of new technology to include the active discovering of complex ecological interactions embedded in everyday language and rural livelihoods. The living knowledge of rural people cannot be harnessed by writing and conventional linear thinking alone. Nayakrishi Andolan thus uses the dynamics of oral culture as the medium of living knowledge. This approach has made it possible for the Nayakrishi Andolan to collect and preserve seeds of biodiversity, using oral culture to secure the collective memory on not only the properties of plants (edible wild plants, medicinals, crop varieties and so on), but also on the combinations of plants and other life forms that can contribute to ecological farming.

The institutional and organizational ramifications of learning innovations of this kind have been far reaching. They include the creation of Nayakrishi Seed Networks, regional Natural Resource Auditing committees, and also a network of Birth Attendants and Medicine Women. These strong networks and biodiversity-based farming practices are steadily expanding because of their productive capacity and ability to meet households' various needs. Household- and village-level seed huts develop and share the specialized knowledge of women farmers. The huts act as spaces for the exchange of seed and knowledge and as living monographs of particular farming strategies. Field experiments based on these seed collections are organized by UBINIG Centres located in all major ecological zones of Bangladesh, in cooperation with national scientists and plant breeders. These experiments allow farmers to directly test Green Revolution claims about the inherent inferiority of local seeds in comparison with the few varieties that make up the commercial seed system. They enhance the capacity of farmers to resist the monoculture imposed by techno-scientific and commercial paradigms of food production. The findings of these and other experiments are shared by farmers through regular regional exchanges. They are also celebrated nationally and locally in biodiversity festivals linking the act of seed saving to the spiritual practices of Bengal through poetry, song and the living knowledge of wandering musicians. Lastly, the knowledge co-generated by the farmers of Nayakrishi Andolan and UBINIG is contributing to a national discourse on ecological agriculture and is informing debates on global issues from the perspective of peasants.

More inclusive ways of knowing and new knowledge are thus being generated through a collective process of learning that unfolds in living experience.

Source: Mazhar et al, 2006; <http://membres.lycos.fr/ubinig/about2.htm>

In the Indian state of Andhra Pradesh, collectives of women *dalit* farmers are using modern digital video technology to document and share their knowledge on bio-cultural diversity and their lives. Autonomous film and radio also enable them to articulate their own visions for the future of food, farming and development. In so doing they are transforming knowledge and ways of knowing for themselves and others inspired by them (see Box 8).

Box 8 Autonomous film and radio: The Community Media Trust experience in South India

The Community Media Trust of the Deccan Development Society (DDS) was created in October 2001 in direct response to the demands of thousands of very poor, low caste women who wanted their unrecognized voices to be heard and acknowledged by the world outside. It works in about 80 villages with women's Sanghams (voluntary village associations of the poor) in the Medak District of Andhra Pradesh, where the official media were seen to be dominated by commercial and political actors whose interests conflict with those of rural communities and their environments.

The Trust is mandated to metaphorically hand over the microphones and cameras to marginalized rural women to produce their own images and authentic voices. Moreover, it strives to take images and voices of rural women to the wider world and create an alternative media that can be accessed and controlled by local communities, especially those that suffer continued exclusion. Twenty women, 17 of whom are working with video and three with radio, constitute the Community Media Trust. The video group operates digital video cameras, portable edit recorders, and computer-based editing facilities to make their films.

The women film makers have together made more than 100 short films on various issues of concern to them and their communities. They have brought fresh perspectives into film making. While the primary engagement of the Trust lies in a horizontal communication with their own communities, their members have also produced dozens of films for other groups and agencies on environment and development issues. These include films about the future of food and farming; the bitter harvest of genetically engineered agriculture; water; lives and livelihoods; women's control over media; environment and agricultural biodiversity. Several of these films have been broadcast as news items on national television channels. They have also been shown in international farmer exchanges for mutual learning, and in film festivals.

Participatory video has also been used as an integral part of action research on the regeneration of diverse food systems and decentralized forms of governance. The Community Media Trust has documented this action research process through the eyes of marginalized women farmers and small farmers. In this way:

- video transforms the lives of the people involved. But it also transforms the research process in which university trained professionals and non-literate, marginalized people are co-inquirers, producing new knowledge that challenges the dominance of western science and learning approaches;
- video empowers marginalized people – especially women – and facilitates social and ecological change;

- Video travels across borders and boundaries to inspire a younger generation of scholars and practitioners to find better ways of doing research *with, by and for* people, not just *on* people.

Through their films and ways of working, the women of the Community Media Trust have engaged with their own communities and other actors in debates over food and seed sovereignty, control over natural resources, market and media. Through participatory communication processes, they have facilitated and recorded critical evaluations of state policies and programmes. They have also established relationships of solidarity with local communities in South Asia and other regions of the world, helping them to develop their own locally controlled and autonomous media.

Sources: www.ddsindia.com and www.diversefoodsystems.org

Enabling contexts for social learning and action

Both of the above 'ways of knowing' for food sovereignty need to be attentive to the links between learning, power and organizational change. For example spaces – including citizen spaces – are infused with power relations, affecting who enters them, who speaks with what knowledge and voice, and who benefits. This is particularly apparent, for example, when both professional knowledge and peoples' experiential knowledge are brought together in the same space and discussed. Foresters, agronomists, protected area managers, water engineers, health professionals, architects, land use planners, and social scientists all have specialist knowledge that can usefully feed into citizen deliberations and more inclusive forms of participation that strengthen civil society. But the deliberative process, and the political negotiation over what constitutes valid knowledge in a particular context, deeply challenges professionals to assume different roles and responsibilities. In particular, citizens with professional knowledge will often need to shift to new roles that facilitate local people's analysis, deliberations and production of knowledge. Moreover, the adoption of a participatory culture within organizations, including civil society organizations, and changes in attitudes and behaviour are unlikely to automatically follow when new methods for deliberation are adopted or suddenly become fashionable. In the 'democratization of research' approach, the design of appropriate institutional mechanisms and rewards to encourage the spread of a participatory culture and praxis within research institutes and universities is obviously a key priority. But to a lesser extent, civil society organizations and food sovereignty movements that seek to create more safe spaces for 'autonomous learning and action' are also similarly challenged to transform themselves. Some ideas about the elements to tackle are offered in Box 9.

Box 9 Organizational transformation for democracy in knowledge production

Key actions for those seeking democratic change and pluralism in organizations that produce social, environmental, economic and technical knowledge (research institutes, universities, government, civil society organizations and federations) include:

- Diversify the governance and the membership of budget allocation committees of public sector planning and research institutes to include representatives of diverse citizen groups. Establish procedures to ensure transparency, equity and accountability in the allocation of funds and dissemination of new knowledge;
- Encourage shifts from hierarchical and rigidly bureaucratic structures to 'flat', flexible and responsive organizations;

- Build capacity of technical and scientific staff in the participatory skills, attitudes and behaviour needed to learn from citizens (mutual listening, respect, gender sensitivity as well as methods for participatory learning and action);
- Provide capacity building and experiential learning for staff/people to develop their ecological literacy and skills in agroecology and ecological design;
- Ensure that senior and middle management positions are occupied by competent facilitators of organizational change with the vision, commitment and ability to reverse gender and other discriminatory biases in the ideologies, disciplines and practices of the organization;
- Promote and reward management that is consultative and participatory rather than hierarchy and efficiency-led. Establish incentive and accountability systems that are equitable for women and men;
- Provide incentives and high rewards for staff and members of organizations to experiment, take initiatives and acknowledge errors as a way of learning-by-doing and engaging with the diverse local realities of citizen's livelihoods in urban and rural contexts;
- Redesign practical arrangements and the use of space and time within the workplace to meet the diverse needs of women, men and older staff and to help them fulfil their new professional obligations to work more closely with citizens and other actors (timetables, career paths, working hours, provision of paternity and maternity leave, childcare provisions, mini-sabbaticals, promotion criteria and so on);
- Encourage and reward the use of gender-disaggregated and socially differentiated local indicators and criteria in monitoring and evaluation as well as in guiding subsequent technical support, policy changes and allocation of scarce resources.

Source: adapted from Bainbridge et al, 2000; Pimbert, 2006b

Last but not least, the participatory forms of inquiry mediated by citizens, their organizations and their federated networks ultimately represent a fundamentally different orientation to the nature of knowledge. This kind of participatory, experiential understanding takes involvement with our surroundings seriously, in all its ecological, social, economic, cultural and spiritual dimensions. The kind of knowledge that emerges from this process of social learning has been well described by James Scott (1998). He speaks of 'forms of knowledge embedded in local experience' (mētis) and sharply contrasts them with 'the more general, abstract knowledge displayed by the state and technical agencies'. Mētis, says Scott, is 'plastic, local and divergent... It is, in fact, the idiosyncrasies of mētis, its contextualities, and its fragmentation that make it so permeable, so open to new ideas'.

In this context, final objective answers matter less than processes of emerging democratic engagement. The quality and validity of this way of knowing cannot be assessed from the narrow standpoint of positivist science alone. Criteria of validation and quality need to be much broader. One important criterion of quality is whether or not this social learning opens up new communicative spaces for democratic inquiry to take place. Another is whether it has contributed to the emergence of a wide community of inquiry among divergent actors. In many ways, social learning for food sovereignty could help to 'shift the dialogue about validity from a concern with idealist questions in search of truth to concern for engagement, dialogue, pragmatic outcomes and an emergent, reflexive sense of what is important' (Bradbury and Reason, 2001).

Coming to terms with this paradigm shift is a challenge that needs to be vigorously embraced by organizations of small-scale producers, socially responsible researchers and other citizens seeking more autonomy through food sovereignty.

Conclusion

Reclaiming knowledge to make 'other worlds possible' must be envisioned in the context of wider social change for two basic reasons. First, knowledge broadly reflects and reinforces specific power relations and worldviews in any society. Deep social change is often needed for the emergence of new knowledge paradigms. Second, while clearly vitally important, new knowledge alone will not lead to endogenous development in food and farming.

Indeed, 'transforming knowledge and ways of knowing' for food sovereignty and bio-cultural diversity is an integral part of a much deeper process of *systemic* change. I have suggested elsewhere (Pimbert, 2006b) that this systemic change depends on several interrelated and mutually reinforcing processes of transformation, including:

- *Nurturing citizenship.* Politics are too important to be left to professionals, they must become the domain of amateurs – of ordinary citizens. Food sovereignty implies greater citizen participation and more direct forms of democracy in the governance of food systems. It assumes that every citizen is competent and reasonable enough to participate in democratic politics. This calls for the development of a different kind of character from that of passive taxpayers and voters. With training and experience, citizens can learn to deliberate, make decisions, and implement their choices responsibly. However, like any form of civilized behaviour, these practices and virtues do not arise spontaneously; they have to be consciously nurtured and are the result of careful political education, which includes character formation. The Athenians called this education *paideia*: the sustained and intentional cultivation of the civic and ethical qualities necessary for citizenship.
- *Confederalism.* Nurturing and strengthening citizen-centered food systems and autonomy calls for forms of political and social organization that can institutionalize interdependence without resorting to the market or the central state. Combining localism with interdependence across large areas is a key challenge here. The principle of confederalism is a way of linking together several political entities into a larger whole. Confederalism involves a network of citizen-based, as opposed to government, bodies or councils with members or delegates elected from popular face-to-face democratic assemblies, in villages, tribes, towns and even neighborhoods of large cities. These confederal bodies or councils become the means of interlinking villages, towns, neighbourhoods and ecological units into a confederation based on shared responsibilities, full accountability, firmly mandated representatives and the right to recall them, if necessary.
- *Dual power.* The larger and more numerous the linked federations and confederations become, the greater is their potential to constitute a significant counter-power to the state and transnational corporations that largely control the

global food system. Confederations can eventually exert 'dual power', using this to further citizen empowerment and democratic change. For example, they can seek power within local government through strategies of collaboration and political negotiation, while also maintaining strong community and municipal organizing strategies at the grassroots. Multiple lanes for engagement can also be used to link community-based food systems, social movements and political parties with direct local governance strategies.

- *Embracing equity and gender inclusion.* Throughout the world, the challenge of widening social inclusion and representation is key for most civil society organizations and federations that seek food sovereignty. Although farming and natural resource management are becoming increasingly feminized, rural organizations still seem to reflect and reinforce the patriarchal relations that characterize many rural societies. Thus if raising the voice of poor people in food and agricultural policy is a general problem, then raising the voice of poor women in these policy discussions is particularly challenging. Gender equity and learning how to better include and respect the voices of the very poor and marginalized remain urgent challenges for the food sovereignty movement and civil society at large.
- *Transforming knowledge and ways of knowing.* We must actively develop more autonomous and participatory ways of knowing to produce knowledge that is ecologically literate, socially just and relevant to context. The whole process should lead to the democratization of research, diverse forms of co-inquiry based on specialist and non-specialist knowledge, an expansion of horizontal networks for autonomous learning and action, and more transparent oversight.
- *Reclaiming property rights and territory.* Food sovereignty implies the implementation of radical processes of agrarian reform and equitable redistribution of rights of access and use over resources, including land, water, forests, seeds and the means of production. Comprehensive agrarian reforms need to consider 'territory' as a more inclusive and important concept than mere 'land' and, with this, the right to self-determination of indigenous peoples in their territories. Broader concepts of territory, collective rights, autonomy and self-determination must be at the heart of future agrarian reforms that seek to balance the needs, rights and demands of diverse actors. These actors include women, men and young people, indigenous peoples, farmers, pastoralists, forest dwellers, migrants, colonists on the agricultural frontiers, rural workers, fisherfolk and others.
- *Deepening democracy in the age of globalization.* There is a need for economic arrangements that offer enough material security and time for citizens (both men and women) to exercise their right to participate in shaping policies for the public good and to develop autonomous food systems. Only with some material security and time can people be 'empowered' to think about what type of policies they would like to see and how they can contribute to them. Levelling the economic playing field for democratic participation and sustainable livelihoods calls for radical and mutually reinforcing structural reforms, including: first, a guaranteed and unconditional minimum income for all; second, a tax on financial speculations; third, a generalized reduction of time spent in wage-work and a

more equitable sharing of jobs; and fourth the relocalization of pluralist economies that combine both subsistence and market-oriented activities.

These critical reflections and proposals for action are offered in a spirit of solidarity with the newly emerging food sovereignty movement and as a contribution to 'learning our way out' of the current impasse of industrial food and farming.

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